

AIGUES-MORTES FROM THE LAGOON.

THE WALLED TOWN OF AIGUES-MORTES.¹

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Aigues-Mortes, in the department of Gard, France, lies about $19\frac{1}{2}$ miles ssw. from Nîmes and 22 miles wsw. from Arles, amongst the lagoons and marshes in the Rhone delta.² It is somewhat more than three miles from the sea, as it always has been during the historic period,³ and owes its name to its surroundings.⁴ To the west stretch broad lagoons, but the land on the north, north-east, and south-east is gradually being brought into cultivation as vineyards, although there are still vast patches of marsh, and in winter the greater part of the district may be under some feet of water.

The town is approached from the north-east by a raised road across the marshes, and some two and a half miles away this road is blocked by the strong Tour Carbonnière, which served as an important outpost and will be described later. Close under the north-west wall of the town run the railway and the Maritime Canal, both ending at Le Grau-du-Roi on the Mediterranean about three and a half miles westward. The principal quay extends in front of the whole length of the north-west curtain, and the canal is here enlarged to form a basin.

The unique interest of Aigues-Mortes lies in its fortifications which, although dating from the latter half of the thirteenth century, are still in an extraordinarily good state of preservation and afford the most perfect example, in western Europe at least, of a thirteenth-century walled town built on a clear site according to one definite plan; built also, as will be shown, with little regard to expense, and illustrating very completely the arrangements for defence and for the residential accommodation of the king, nobles

¹ Read before the Institute, 6th Nov. 1912. The author regrets that causes outside his own control have prevented the earlier completion of the paper for publication.

² Jefferys (p. 418) gives the exact position as lat. $43^{\circ} 35'$ N. and long. $4^{\circ} 20'$ E. (*A Description of the Maritime Parts of*

France. By Thomas Jefferys, Geographer to the King. 2nd ed. London, 1774.).

³ *Les Villes Mortes du Golfe de Lyon*. By Charles Lenthéric. 4th ed. Paris. 1883. pp. 357-383.

⁴ Aigues-Mortes = *Aquae mortuae* = dead waters.

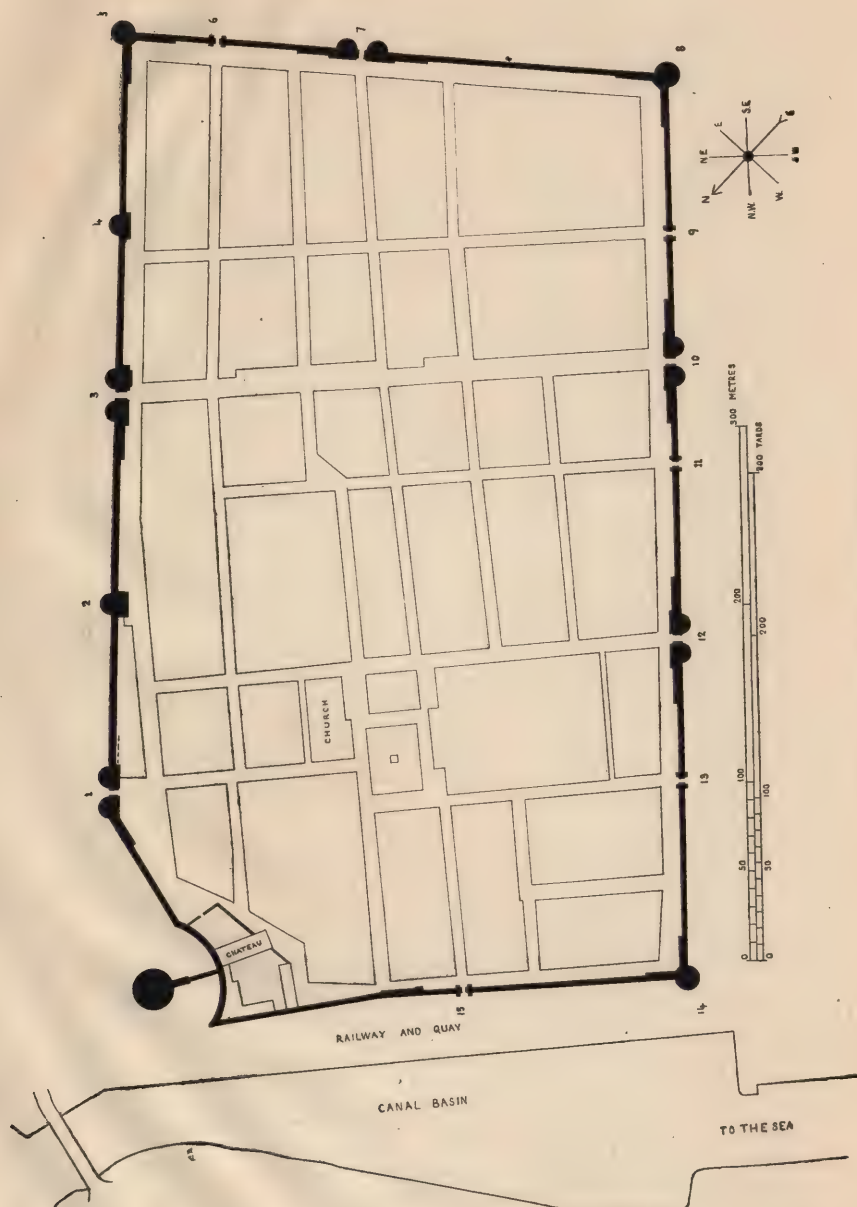


FIG. I. PLAN OF AIGUES-MORTES.

and garrison as understood at that time. Moreover they show in many features the influence of the crusades on the military architecture of western Europe. The walls and the great tower have never been seriously damaged by siege, and have never been allowed to become ruinous. They were in the charge of the Ministry of War up to 1890 and became officially a 'monument historique' very soon afterwards. In 1774 Thos. Jefferys, geographer to the king, wrote: "The fortifications of the place are old, but they are not ruinous. They consist of a strong and thick wall built of cut stone and flanked with sixteen large and strong towers. . . . The tower of Constance adjoins to the town; it is a very old strong building, not only entire, but without any visible decay."¹

Prosper Mérimée in 1835 wrote² of the ramparts as "still perfectly preserved," and in 1865 Topin³ described it as "the only town of the middle ages which has, up to the present, been entirely respected both by man and by time."

In the sixteenth or early seventeenth century a château was built in the north-west angle and enclosed on the town side by a wall looped for firearms, and the parapet of the ancient wall (which is here concave and formed a partial 'chemin de ronde' to the great tower outside) was at the same time altered and pierced with loops of various shapes suitable for the use of hand-guns and cannon, and was provided with an inner parapet, one section of which is looped for the same purpose. Then, or perhaps earlier, gun-loops flanking the curtains were opened in the bases of some of the gate-towers and the other towers, and necessary repairs were made to the curtain and battlements at various points. In modern times the upper parts of the turrets, the portals of some of the gateways,⁴ and the most weatherworn parts of the tower and wall-faces have been repaired; and two or three of the tower basements are still considerably damaged in their details. With these exceptions, however, the walls and towers stand

¹ op. cit. p. 418.

² *Notes sur un Voyage dans le Midi de France.*

³ *Histoire d'Aigues-Mortes.* Nîmes. 1873.

⁴ Those portals which had been walled up

have been re-opened. Du Mége stated in 1836 (*Société Archéologique du Midi de la France*, vol. 2, pp. 25 et seq.) that most of the gates had been walled up at some earlier time or times.

as they were originally built; they have escaped that over-restoration which has destroyed so much of the archaeological interest and picturesque attraction of some other fortified towns in France.

Several books have been written on the history of Aigues-Mortes and its relation to the general history of France, in which, from the time of its foundation as a walled town, it played a relatively conspicuous part for so small a place; but I cannot find that any detailed account of its fortifications from an architectural point of view has hitherto been published, though brief notices naturally occur in several books. After short visits to the town in 1909 and 1910 the Ministère des Beaux-Arts very kindly gave me special facilities for examining the towers and walls in detail, and I spent some time in 1911 and 1912 making measurements and taking notes and photographs. The results of these observations I now have the honour of laying before the Institute.

ORIGIN OF THE TOWN.

The origin of the town as such is of considerable interest.¹ It began as a small village of salt-workers and fisher-folk, protected by a tower called Tour Matafère, and at the end of the eighth century the village and adjoining land were given by Charlemagne to the monastery of Psalmodi, which stood about three miles north of the present town. In the twelfth century Aigues-Mortes seems to have been well known as a port.

In 1244 Louis IX of France, afterwards known as Saint Louis, decided to 'take the cross,' and in connexion with his proposed crusade proceeded to establish on the Mediterranean a port which should be part of the kingdom of France as it then was. Narbonne had silted up long before, and Marseilles belonged as yet to the count of Provence and was subject to the overlordship of the emperor Frederic, who was as likely as not to be unfriendly. King Louis decided on Aigues-Mortes as the site of his

¹ Unless otherwise stated, the historical information is derived from the monumental *Histoire Générale de Languedoc*, by Dom Devic and Dom Vaissette. Toulouse. 1872-1905.



AIGUES-MORTES FROM THE TOUR DE CONSTANCE.



new town and port, and arranged to acquire necessary land from the convent of Psalmodi. He gave to the abbot and convent by way of exchange an estate or condamine in the canton of Sommières, which lies still further north.

In 1246 pope Innocent IV, whilst at Lyons, issued a bull to the bishop of Uzès, in which he states that he has been informed of a proposed exchange of land between Psalmodi and the king, and he instructs the bishop to look very carefully into the matter so that the exchange may not be to the disadvantage of the monastery. As soon as the provisional agreement was arrived at the king set about his preparations with so much energy that in the same year, 1246,¹ Matthew Paris writes of a new port which the king of France has created in Provence² on the borders of the Mediterranean, and has provided with strong fortifications.³

In order to attract traders and others to the new town the king gave it great privileges in a charter granted at Paris in May, 1246, and confirmed afterwards by Philippe-Hardi and his successors up to the time of the Revolution. Amongst other things the inhabitants were exempt from poll-tax and property-tax and also from inquiry into their conduct in previous places of residence, which in some cases no doubt was a potent factor in attracting them to the town. For a period of twenty years from the date of the charter they were free from any kind of military service outside the town and port, and afterwards such service was not to be required beyond the limited area comprised in the dioceses of Maguelonne, Uzès, Nîmes, Arles and Avignon. The inhabitants also had a voice in the election of four consuls who controlled the affairs of the town, and the king arranged for the administration of justice by appointing a lieutenant (*bailli* or *viguier*) and a judge, who were not to be inhabitants of the town. The consuls, the lieutenant, and the judge were changed every

¹ Misquoted as 1240 in the *Histoire Générale de Languedoc*.

² Aigues-Mortes later on was included in the province of Languedoc, which did not exist as such in 1246.

³ '*Portus novus paratur in Provincia litus maris Mediterranei*.

⁴ 'A diverticulo igitur redeuntis materiam

principalem continuemus. Dominus igitur rex Francorum ne sibi possit inferre nocumta Frethericus peregrinatur et portuum oportunitatem denegare navigatur sibi in Provincia super mare Mediterraneum portum aptissimum multis effusus sumptibus praeparavit et castris fortissimis prudenter communivit': Matthew Paris, *Historia Magna*, Rolls ed. vol. iv, p. 546.

year. It is little wonder that Aigues-Mortes quickly became well populated (as was testified in the course of an inquiry held in 1298-1299), and that it was an object of envy to the neighbouring towns which had no similar privileges.

In the new town and port king Louis assembled his great following of men and horses and ships for the seventh crusade, and in August, 1248, just before he sailed for the Holy Land, on the 27th day of that month, he formally executed an agreement with the abbot and convent of Psalmodi, ratifying the arrangement arrived at some time before.¹ The conveyance and the counterpart are printed in the appendix (pp. 291-4).

As Marquet has pointed out,² it seems clear from the wording of these deeds that the king had already obtained some of the land that he wanted, in some other way, for the boundaries of what he is acquiring from the abbot are defined by reference to land of which he is already the owner. In the one document it is "quod territorium incipit a consa Johannini quae dividit terram donae Gairodæ a territorio domini regis," and in the other "... quae dividit terram dominae Giraldae a territorio nostro." The land acquired from the abbot is clearly that on which the town had been built ("territorium in quo sita est villa de Aquis Mortuis et fortalicia ejusdem loci"), and the land the king already had must have been contiguous to it. Jefferys³ says that "At the same time that Lewis IX became proprietor of the district of Aigues-Mortes, he likewise got the tower of Constance from the knights of Malta in exchange for the village of St. Christol,⁴ which still continues in the possession of that order." He further states that at the time when he was writing (1774) one of the salt-pits near Aigues-Mortes still belonged to the knights of Malta.

Exactly what works king Louis completed before setting out for the Holy Land is not clear. He had traced out the

¹ It is noteworthy that the king completed several other important documents at this time: e.g. the authority for the building of the new 'basse-ville' at Carcassonne.

² *La Charte des Libertés et coutumes*

d'Aigues-Mortes. By Jean Marquet. Paris. 1893.

³ *op. cit.* i, p. 419.

⁴ This may be Saint-Christan in the Basses-Pyrénées, famous from a very remote period for the healing qualities of its mineral springs.

general plan of the town and he had certainly set up strong fortifications, most probably in the form of banks and ditches strengthened by palisades, but at this time and for many years afterwards there were no town walls. He may have begun the erection of the great Tour de Constance near the site of the ancient Tour Matafère. At an inquest held in the Viguerie of Alais in the seneschalry of Beaucaire, seemingly a few years later than 1247, complaint was made that the castellan of Alais had compelled the stone-masons of that town to go to Aigues-Mortes and to take their tools with them, but had given them no money for the expenses of the journey. At the latest the erection of the tower must have begun very soon after the king's return from the East in 1254, because it was complete or practically complete in 1266, and pope Clement IV, writing to the king in that year, refers to the tower which the king has built in such a sumptuous manner at Aigues-Mortes for the protection of pilgrims and traders journeying to the Holy Land.¹ The architectural details of the tower, moreover, are typical of the middle of the thirteenth century.

Although for some time the great tower was the principal defence of the growing town, Aigues-Mortes does not belong to that large class of towns that grew up sporadically and irregularly under the shadow and protection of some pre-existing castle. Here the town and castle are essential parts of the original conception, and their relative positions and the general lay-out of the town were determined before the erection of the tower was begun.

The position of the castle with respect to the town (fig. 1) is in accordance with the arrangement generally adopted in the thirteenth century, but there are comparatively few cases where castle and town stand on a level site. I have been unable to find any other case in which a single round tower plays exactly the same part as the Tour de Constance at Aigues-Mortes. At Coucy-le-Château, which is the nearest analogue, the great circular tower was well within the curtilage of the castle, of which it was only a part and not the whole. On the other hand,

¹ '... cum in portu qui Aquarum Mortuarum vulgariter appellatur turrin dudum construxeris opere sumptuoso ut

tam peregrini quam etiam mercatores in terram sanctam ex inde profecturi cum rebus suis salvi consistere valeant in eodem.'

at Lillebonne and at Tournebut in France, and at Flint in Great Britain there is an entirely detached round tower which stands to the rest of the castle in precisely the same relation as the Tour de Constance stands to the town of Aigues-Mortes.

Round towers of great size serving as the keeps or principal towers of fortified enclosures are rare in Great Britain, but were erected in considerable numbers in France towards the end of the twelfth and during the thirteenth century, and they are also numerous along the Rhine. In Great Britain we have, amongst others, the thirteenth-century tower at Pembroke Castle, the smaller and earlier tower on the mound at Caldicot, the keeps at Launceston, Dolbadarn, Penrice, Skenfrith and Tretower, and the great tower at Barnard Castle, which, however, is on the line of, and is connected with, the curtain. The great keeps at Conisbrough and Orford have their cylindrical form more or less masked by the attached buttress-towers.

In France the largest towers of this type are at Coucy-le-Château, the greatest of all cylindrical keeps, Aigues-Mortes, Châteaudun, Gisors, Villeneuve-le-Roi (Yonne), Lillebonne and Tournebut, those at Châteaudun and Gisors being on the lines of the curtains. Of these the Aigues-Mortes tower is second in point of size and one of the latest in date. It is noteworthy that although intended for residential purposes when occasion required, it retains some of the principal features of Norman keeps: the great thickness of the walls, narrow slits in place of windows, provision for active defence mainly from the top. None of the other great towers of this type has been so little restored or retains so many of its original features, and it seems well, therefore, to describe it in considerable detail.

THE TOUR DE CONSTANCE.¹

This great tower stands outside the north-west angle of the town and originally had its own ditch, bank, and

¹ Topin states (op. cit.) 'on the evidence of a valuable manuscript belonging to the family of Conseil' that Raymond VI, count of Toulouse, who married in 1158 Constance of France, sister of Louis VII, restored

Charlemagne's Tour Matafère and renamed it after his own wife. King Louis, when he built his new tower, gave it, in memory of his ancestress, the later name of the tower that it replaced.



THE TOUR DE CONSTANCE FROM N.

palisades,¹ but the ditch was filled up many years ago and any defensive banks then left have been destroyed.²

The tower (plate III) is an immense hollow cylinder of stone on a battering base, the lower part of which has been hidden by the filling up of the ditch. The part still above ground batters to a height of about 14 ft. From ground-level to the top of the tower is about 100 ft. and on the top is a turret 34 ft. high still carrying the lofty wrought-iron cage which contained the basket of the fire by means of which the turret served as the lighthouse of the port. The tower is very finely built of large ashlar, carefully laid with thin joints. The only openings other than doors visible on the outside are two rows of very long and very narrow slits, a large oblong window with an external iron grate facing north on the second floor, a small window to the south from the oratory on the same floor, and the small slits lighting the staircase and a garderobe. On the north there is a walled-up postern from the first floor, and the main entrance is on the same level to the south at the point nearest the town wall.

The tower is reached from the inner quadrangle of the château enclosure, through an oblong turret built against the north end of the west side of the main block of the château, and along a late stone bridge of three arches all now walled up (plate IV, 4). The total length of the bridge from the town wall to the tower door is 31 yards, and for most of its length it is 4 ft. 8 ins. broad between the parapets, but for a distance of 11 yards from the tower it is 10 ft. 6 ins. broad. The parapet walls, 1 ft. 5 ins. thick, are not earlier than the sixteenth century and are looped for firearms. The roadway is paved with flagstones throughout its length. Doubtless the floor of the part near the tower was originally

¹ In the agreement with Boccanegra in 1272: 'turri nostra cum fossatis et vallo circa turrem.'

² Most probably outside the town wall the tower ditch was surrounded originally by a bank and a palisade, and it is noteworthy that the word used in Boccanegra's agreement (preceding note) is *vallum* and not *murus*. The ancient canal of La Roubine helped to defend the tower on the west side. From the words used by Mérimée in 1835 and Du Mége in 1836, it would seem that

some of the tower banks were then still standing, but doubtless they were destroyed by the great inundation of 1840 which swept away the adjoining quay. A drawing of the tower in the first edition of a *Notice sur la ville d'Aigues-Mortes*, by F. Em. di Petro (Paris, 1821) shows the base of the tower surrounded by a comparatively slight wall, much lower than the town walls, but so far as any conclusion at all can be drawn from this sketch, this encircling wall was much later in date than the walls of the town.

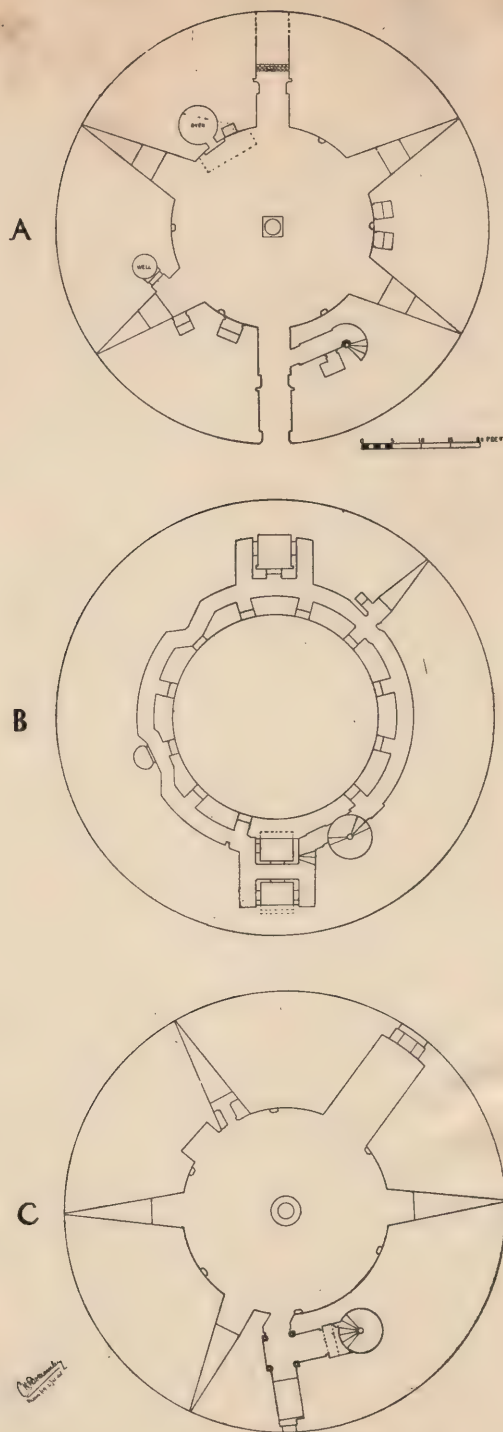


FIG. 2. TOUR DE CONSTANCE. PLANS (A) OF FIRST FLOOR, (B) AT LEVEL OF PORTCULLIS-CHAMBER AND WALL-GALLERY, (C) OF SECOND FLOOR.

of wood and easily removable; probably at first the whole bridge was of this material. There is no evidence of any drawbridge apparatus either in the face of the tower or on the bridge itself.

The entrance is through a pointed archway, 5 ft. 5 ins. wide, closed by a broad single-leafed door. No bar-slots are visible. The passage is lofty with a slightly pointed barrel-vault, and in the middle of it is a large oblong opening for the projection of missiles. There is a square portcullis-groove, 6 ft. 4 ins. from the entrance, which runs up to the inner edge of this opening. Behind the portcullis is a second door, likewise without any bar, and in the crown of the vaulted passage beyond is a second large oblong opening. In the right-hand wall of the second section of the passage, in such a position that it is hidden by the second door when open, is a doorway into a short lobby, set askew, leading to the newel stair. In the wall, under this stair, is a capacious locker with a stone shelf; its oblong opening is rebated for a door.

The first chamber of the tower, 34 ft. 5 ins. in diameter, is a lofty but somewhat gloomy apartment, with, however, many points of interest. Going clockwise from the entrance there is first a mural cupboard or locker, 3 ft. 7 ins. broad, 4 ft. high, and 3 ft. 6 ins. from back to front, with a stone shelf, 1 ft. 6 ins. broad, about half-way above the base. The front edges of the locker are rebated for a door or shutter.

Then comes a pointed arch 7 ft. wide and 10 ft. 6 ins. high opening into a splayed loop-recess with a pointed barrel-vault. The floor of the chamber extends 10 ft. into the recess, and then slopes somewhat steeply to the bottom of the slit (about 4 ins. broad) in the outer face of the wall. The total thickness of the wall is 19 ft. 5 ins. If these slits were used by bowmen for active defence against an enemy, there must have been some sort of wooden floor to bring the soldier nearer to the slit or loop. It seems most probable, however, that the slits were intended mainly, if not solely, for the admission of light and air. In the left-hand wall of this recess, near the entrance, is a locker in the wall similar to that already described, but somewhat smaller, and in the opposite wall a pointed arch gives access to the well, the tube of which, 4 ft. in diameter.

runs down to the basement and up to the gallery in the wall round the upper part of the chamber.

Further on is a similar loop-recess without any openings in its side walls, and then a fireplace with a fine projecting hood 6 ft. 8 ins. from the floor, 9 ft. 8 ins. long, and 4 ft. from back to front (plate iv, 1). The frame of the hood is of wood and the rest plaster. The flue is in the thickness of the wall and runs up to the top of the tower. At the back is a beehive oven 6 ft. 6 ins. in diameter, with a stone ledge (restored) 4 ft. long and $6\frac{1}{2}$ ins. broad in front of the round-headed opening. To the right of the oven is a small locker in the wall at the back of the hearth.

Opposite the main entrance is a passage 5 ft. 5 ins. wide, with a pointed barrel-vault 14 ft. 9 ins. high, leading to a postern now walled up. This postern had a narrower inner door with a segmental head, in front of which was a square portcullis-groove (now filled with a modern portcullis) which runs up to a large oblong opening in the crown of the vault of the passage between the inner and outer doors. Beyond the portcullis the lower part of the passage is partly walled up, and the doorway in the outer face of the tower is built up flush with the wall-face.

To the right of the postern passage is a third loop-recess, with plain walls, and to right of that a pair of wall-lockers, one on either side of a vaulting shaft. They have stone shelves and are similar to those already described. Lastly, there is another loop-recess with plain walls.

The chamber is 36 ft. high and is vaulted in twelve compartments. The slender vaulting ribs, which have a filleted round between two hollows, spring, at a height of 18 ft. 6 ins. either from corbels or from octagonal vaulting-shafts with somewhat stilted bases, and terminate in a finely moulded ring 2 ft. 8 ins. in internal diameter, which opens into the chamber above. The capitals and corbels are of typical thirteenth-century form, with leaf ornament. In each of the vaulting compartments, except that over the main entrance, there is in the wall a pointed-arched opening from the gallery in the wall.

In the centre of the floor of the chamber is a circular hole 2 ft. 5 ins. in diameter communicating with the basement of the tower, which is a storeroom of the usual beehive shape, lighted and aired only by very narrow slits

in the wall. The well is not directly under the central opening, as some writers have stated, but is in the wall of the tower.

The chamber retains little evidence of its long use as a prison. In the walls of most of the loop-recesses, however, there are indications that partitions were erected across them and held in place by bars. In the wall on one side is a square hole for one end of the bar, and on the opposite side there is an L-shaped opening allowing the other end of the bar to be slid into position after the manner of the domestic towel-roller. In some cases this fastening can

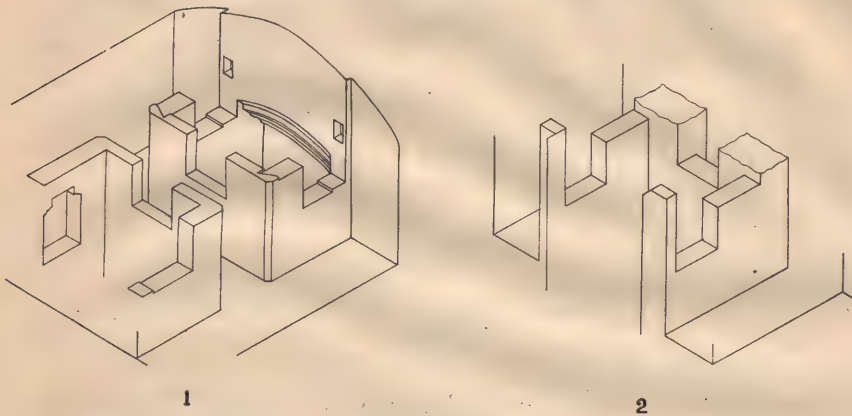


FIG. 3. TOUR DE CONSTANCE: EMBATTLED OPENINGS IN PORTCULLIS-CHAMBER OVER MAIN ENTRANCE.

be seen near the entrance to the recess and also about half-way in.

The chamber has been kept in good repair, but it does not seem that even the architectural details, except the bases of the vaulting-shafts (now restored), have ever suffered any considerable damage, probably because the prisoners were usually women suffering solely for their religious belief.

The newel stair which rises from the first floor to the roof is reached from the main entrance by the lobby previously described. The newel is 9 to 10 ins. in diameter, and the steps are 3 ft. 1 in. long with a riser of about 7 ins. Against the newel the ends of the steps

are moulded in a simple but effective manner, a purely decorative detail which is typical of the sumptuous manner in which the whole work was carried out.

At the thirty-sixth step a door on the left leads into the portcullis-chamber over the main entrance, and another to the right of it gives access to the wall-gallery round the vault of the first-floor chamber.

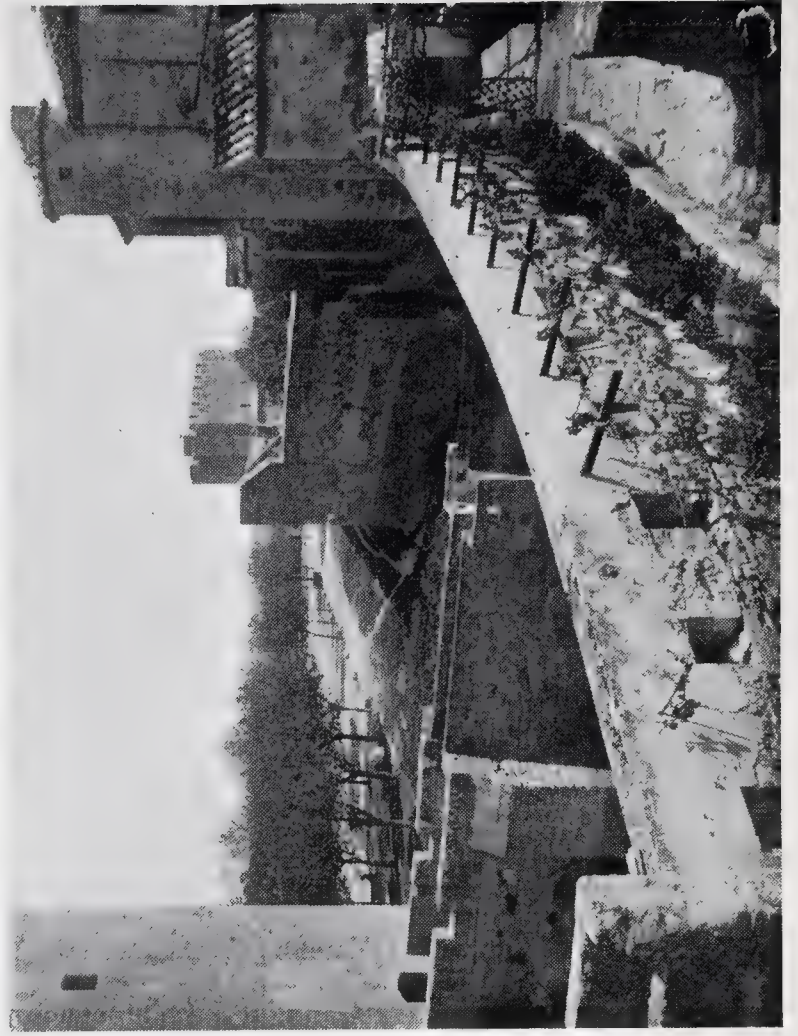
The portcullis-chamber is 11 ft. 6 ins. from east to west, and 12 ft. 6 ins. from north to south, with side walls 6 ft. high and a plain barrel-vault 8 ft. 6 ins. high in the middle. It is very remarkable, because the two oblong openings which command the main entrance are embattled (fig. 3). The portcullis-grooves run up in the western angles of the eastern opening, and the upper surface of the parapet is recessed at the corners, no doubt to receive the apparatus for working the portcullis. In the east wall, 1 ft. 10 ins. above the parapet, are two oblong openings 10 to 11 ins. high, 6 ins. broad, and 5 ins. deep, which probably served in the same connexion. At each end of the chamber there is a moulded arch over the opening, but below the top of the parapet.

In the north-west corner of the portcullis-chamber a door gives access to the gallery in the wall behind and below the vaulting-cells of the first-floor chamber. The passage, which has a pointed barrel-vault, has an average breadth of 2 ft. 9 ins. the thickness of its inner wall varying in different parts, with a maximum of 3 ft. 3 ins. On the inner side of this gallery there are eleven openings 2 ft. 3 ins. broad, with pointed arches 7 ft. 5 ins. high above the floor, and breast-walls 2 ft. 10 ins. to 3 ft. 2 ins. high and 1 ft. 1 in. thick. The place of the twelfth opening is occupied by the east wall of the main portcullis-chamber. Opposite the west wall of the first opening going clockwise from the portcullis-chamber is the jamb of a doorway, and opposite the third opening is an arched recess over the top of the well-tube. The fifth opening is very widely splayed to allow for passage way in front of the chimney, whilst opposite the sixth and seventh openings is the portcullis-chamber of the postern. In front of the portcullis, and commanding the postern passage below, is a large oblong opening with breast-walls or parapets 2 ft. 10 ins. high on three sides; the portcullis-groove





2. TOUR DE CONSTANCE, UPPER FLOOR CHAMBER.



4. CHEMIN DE RONDE AND BRIDGE TO TOUR DE CONSTANCE.



1. TOUR DE CONSTANCE, FIRST-FLOOR CHAMBER.



3. TOUR CARBONNIÈRE.

runs up in the inner angles. On either side of this chamber is a passage which gives access to the oblong opening for the projection of missiles and is 2 ft. 9 ins. broad, with a pointed barrel-vault 7 ft. 5 ins. high. Opposite the eighth opening is the only garderobe chamber in the tower, and it has been considerably restored and the seat covered up. Light for this chamber is derived from a short narrow slit very widely splayed. At the further end of the gallery a door 2 ft. 8 ins. wide opens on to the newel stair.

The upper floor of the tower is reached by 67 steps, with 7-inch risers, from the first floor. A lobby about 5 ft. wide and 7 ft. long with a pointed barrel-vault leads from the newel stair through a segmental-headed door into a second lobby or chamber nearly at right-angles to it. Three feet from the stair are the jambs of the doorway just referred to, and in front of it, in the vault, is an oblong opening 4 ft. 2 ins. long and 1 ft. 6. ins. broad.

The crossing of the two lobbies has a beautiful pointed groined vault, the slender vaulting-ribs of which, well moulded and without any fillet, spring from round detached angle-shafts with octagonal bases and capitals ornamented with foliage, and meet in a carved boss. The eastern arm has a plain pointed barrel-vault and may have served as an oratory, as is commonly stated; below a small oblong window in the outer wall there is a small stone slab. On the west is the entrance to the upper chamber of the tower through a segmental headed doorway under a much higher pointed arch. Going clockwise from the door there are two loop-recesses with pointed barrel-vaults similar to those on the first floor, except that the stone floor of the chamber extends only $4\frac{1}{2}$ to $5\frac{1}{2}$ ft. into the recess, and then slopes down to the bottom of the very long narrow slit in the outer face of the wall, the length of the slope being as much as 20 ft, while the slits are 24 ft. long.

Next is a fireplace $6\frac{1}{2}$ ft. broad and 2 ft. 8 in. from back to front at the hearth, with a head formed by a single large stone worked as a segmental arch (plate IV, 2). This stone is flush with the face of the wall, but has a bold projecting round along its upper edge. From the appearance of the wall above the fireplace, and of the inside of the flue, it is clear that at some time, probably in the sixteenth or early seven-

teenth century, there have been alterations and repairs somewhat roughly carried out. It is not unlikely that the original fireplace had a lofty projecting hood which fell into disrepair, and was replaced by the present arrangement.

Close by and to the right of the fireplace is a loop-recess similar to the others, but retaining some of the alterations made in order to adapt it as a prison cell. The entrance is walled up, and in the walling is a narrow low round-headed doorway rebated on the outside for a door, which fastened on the outside, and still has one of the hinge-pivots remaining on the right-hand side. It is singular, however, that there is also a rebate for a door on the inner side, and two of its hinge-pivots remain on the left hand. The floor of the recess was extended towards the loop-slit as a wooden floor, some of the beams of which remain. Possibly the other loop-recesses were treated in the same way, but if so, they have been so completely restored to their original condition that there are now no indications of the alterations. At present all the loop-recesses of this chamber and the chamber below have a pair of long iron bars with lateral projections extending from the crown of the vault to the sloping part of the loop, some distance beyond the edge of the flat floor.

Next in order is a wall-chamber nearly 9 ft. broad and 16 ft. 6 ins. long with a slightly pointed barrel-vault. At the end is a window-recess with stone side-seats, and a large oblong light, rebated for a shutter. Outside this window is an iron grate similar to those on some of the gate-towers. Between this chamber and the door there is a fourth loop-recess similar to the others. In the centre of the floor is a stone ring 2 ft. 9 ins. in diameter opening in the crown of the vault below.

The chamber is vaulted in twelve compartments, the ribs springing alternately from vaulting-shafts and corbels and meeting in a moulded ring in the crown of the vault. The shafts and their capitals, the corbels, and the ribs are similar to those of the chamber below. The height from the floor to the bases of the capitals and corbels is 18 ft., and to the central ring 36 ft.

The newel stair continues by 68 steps (7-inch risers) to the roof, and on the left hand, on the way up, there is a recess containing a short flight of steps and the upper

end of the oblong opening for the projection of missiles in front of the doorway in the lobby below. The staircase opens on to the roof through a low narrow door, the stair-head being plain and formed of stone slabs. Probably the stair-head in its present form is of the same date as the battlements. The roof of the tower is covered with large stone slabs which slope gently from the centre towards the circumference. In the centre is a stone ring 4 ins. high and 11 ins. broad chamfered on the outside, and inclosing a circular opening 2 ft. 9 ins. in diameter in the crown of the vault of the upper chamber. It communicates with the basement of the tower through the openings in the vaults of the first floor and upper chamber. Allowing for the projection of the ring the thickness of the crown of the vault of the upper chamber is three feet.

On the southern edge of the tower is a round turret containing a newel stair which gives access to a narrow parapetted walk round the turret, and some feet above this, on the top of the turret, to a wrought-iron cage that formerly contained the basket of the beacon-fire, by means of which this turret served as a lighthouse for the port. The turret is contemporaneous with the tower, and was used as a lighthouse as soon as it was completed. In an inquiry held in 1298-1299 testimony was given as to the erection at Aigues-Mortes of a very high and strong tower and the provision of a lighthouse at the top of it by king Louis, and this was said to be then a matter of common knowledge and report in the seneschalry of Beaucaire.¹

At another point near the outer edge of the tower is a square chimney with a moulded cornice. Generally speaking, however, the roof of the tower forms a large unencumbered platform, well adapted for the setting up of the engines of war of the thirteenth century.

The battlements of the tower have been entirely altered and adapted to the use of artillery. The present parapet, which no doubt formed part of the original parapet, has three widely-splayed embrasures with considerable plunge. The outer edge of the parapet has been carefully rounded. The alteration is not earlier than the sixteenth

¹ Drawings of the turret and of the ironwork will be found in *Archives de la Commission des Monuments Historiques*,

vol. 5, reproduced in Enlart's *Manuel d'archéologie française*, vol. ii, *Architecture civile et militaire*, 1904, pp. 262, 263.

century, and may have been carried out at the same time as the building of the château.¹

A moulding that remains on the outer face of the lighthouse-turret may represent the height of the original parapet, but affords no evidence of its character. Near the top of the tower there can still be seen the lower part of one of the original loop-slits of the parapet and also part of the original topmost light of the newel stair. It is reasonable to conjecture that originally the great thickness of the wall was divided between a raised walk, possibly in more than one stage, and a crenellated parapet, as at Coucy. At present there is no evidence that the tower was ever provided with 'hourds' or with the means of erecting them, and in this it resembles the towers of the gatehouses on the town walls.²

THE TOWN WALLS.

The plan of the town is not rectangular, but is approximately an oblong quadrilateral with the north-west angle truncated. Part of the truncation is curved and is concentric with the great tower to which it formed a partial 'chemin de ronde.' The mean length from north-west to south-east is about 556 yards, and from north-east to south-west about 334 yards, the longer axis of the quadrilateral running almost exactly due north-west and south-east. The main features of the plan given in fig. 1 are adapted from that of Gros,³ the details being inserted from the author's own measurements. Notwithstanding the alterations of frontages caused by the rebuilding of the houses at later dates, the plan still shows in a very marked manner the rectangular or chess-board lay-out characteristic of so many towns of about the same date: e.g. the 'basse-ville' at Carcassonne.⁴

The ditches which protected the walls were filled up

¹ A similar change was made in the top of the keep of the castle at Carlisle.

² A section of the tower is given in *Archives de la Commission des Monuments Historiques*, vol. 5, Languedoc; and another section in *Congrès Archéologique de France: Avignon*, 1909, vol. 1.

³ *Notice sur le Port d'Aigues-Mortes*. By M. Gros. Paris, 1894.

⁴ This method of planning was general in Roman times and after a long period of disuse it was revived towards the end of the twelfth century and adopted for many of the new towns in the thirteenth century.

at the end of the eighteenth or very early in the nineteenth century, because of the stagnant and foul character of the water, and the material excavated from the Beaucaire canal is said to have been used for that purpose. Mérimée, writing in 1835, says that the ditches had then been filled up for some years and planted with trees. Probably on the south side there was no ditch, the water of the lagoon then coming much closer to the wall than it does now under normal conditions. There seems to be no doubt that for a long time the principal quay was along this side. Mérimée (op. cit.) states that, when he saw the place, iron rings for mooring ships still remained in parts of the south wall, more especially towards its west end, but they have since disappeared. A small plan of the town given in *Atlas géographique et militaire de la France*, by R. J. Julien (Paris 1751) shows La Roubine close to the town wall and the Tour de Constance on the north-west, whilst on the south-west the water of the lagoon is shown close to the wall, beginning at about one-third of the distance eastwards from the Porte des Moulins to the Porte des Galions, and ending half-way between the Porte de la Marine and the Porte de l'Arsenal.

It is said that king Louis in addition to building the great tower also traced out the town, but none of the existing walls can be ascribed to him, and his defences were probably ditches and palisades. In the letter of 1266 already referred to (p. 223) pope Clement says that he is aware that the king has long desired to surround the town by walls for better protection, not only from enemies but also against the violence of the wind and against sandstorms, and he concurs in the king and his successors levying a tax for this purpose on merchants residing in Montpellier or in the neighbourhood, and on those trading in the port. He authorises the king to call together the prelates of the province of Narbonne, the nobility and gentry of the neighbourhood, and the consuls of Montpellier and the adjacent communities in order to discuss this tax with them. It is stipulated that the tax is not to be too high and is not to be increased subsequently.

In 1272, Philippe-le-Hardi, the son and successor of king Louis, whilst on his way to take possession of the county of Toulouse, stayed at Marmande and there entered into

an agreement with one William Boccanegra, a Genoese, concerning the town and port of Aigues-Mortes. Boccanegra has usually been described as an architect, but though like many leading men of his time and town he was probably well acquainted with the art of fortification and of war in general, he was not a professional architect in the usual sense of the word. He was a man of affairs and of much wealth. In 1257 he was 'captain of the people' and first magistrate in Genoa,¹ but had been obliged to flee in consequence of one of those civic disturbances characteristic of the times, and had settled in or near Aigues-Mortes. He was already in the service of the king² and had proved his worth, for in the agreement he is described as 'dilecto et fideli nostro, Guillelmo Buccanigra, servienti nostro.' Under the agreement Boccanegra was to find 5,000 livres tournois (equivalent to nearly 450,000 francs of present money) in instalments of 500 livres at a time as they were required, and this was to be expended on the necessary works to the port and the town under the direction of the seneschal of Beaucaire, or some other representative of the king duly appointed for the purpose. For ten years from the date of the agreement the king undertook to devote all the revenues of the port to the carrying out of the same works and the town was to be the joint property of the king and Boccanegra. At the end of the ten years the town and all its revenues were to be the joint property of the king and Boccanegra or their respective heirs, but they were likewise to share any necessary expenditure on the maintenance of the town and port. Boccanegra and his heirs were to do homage to the king for their possessions, and after the ten years they were to submit to the service due to the king and his successors according to the use and custom of the country. The king was to retain sole possession of the great tower with its ditches, banks and palisades, and also of certain houses in the town which belonged to him. He also reserved to himself the homage and the oath of fidelity of the inhabitants and the men-at-arms, both horse and foot,

¹ *Mémoires sur le Port d'Aigues-Mortes.* By Jules Pagézy. Paris, 1879.

² Pagézy states (op. cit.) that just before Louis IX embarked on his second crusade in 1272, he appointed Boccanegra 'receiver for the king' at Aigues-Mortes.

At the inquest held in 1298-9 (p. 222) evidence was given that Boccanegra was the first to levy tolls at the port of Aigues-Mortes and that this levy began 25 to 27 years before the holding of the inquest.

and likewise the high justice which he extended to all the cases in which a man was liable to be executed or exiled, or to be mutilated in one of his limbs. Other provisions in the agreement relate to the levying of the dues of the port, the administration of justice, etc. The document is of great interest in the light it throws on the modes of development of medieval towns, and in the appendix (pp. 291-4) it is reproduced in extenso as printed by Pagézy.

In view of the fact that the money provided by Boccanegra was to be expended under the direction of the seneschal of Beaucaire it may reasonably be argued that the seneschal was the actual architect, and not Boccanegra. This is the more probable because the seneschals appointed at this time in the south of France were selected largely for their capacity as military leaders and their general knowledge of the art of war. The facts, that whilst following the same general type in each case, no two gate-houses, or posterns, or angle-towers or wall-towers are exactly alike and that each section of the curtain between each pair of towers has points of detail different from the other sections, show clearly that whilst conforming to the general plans of the directing mind, whether the seneschal or another, the master of each group or gang of masons was allowed to carry out his own ideas in matters of detail.

Boccanegra died less than two years after the agreement had been made, but in that time a sum of 12,125 livres tournois, equivalent to more than a million francs of modern money, had been expended on the various works. The king arranged to buy out Boccanegra's widow and heirs, repaying the 5,000 livres tournois, and the settlement was effected by means of four documents dated 6th January, 1st March, and calends of April, 1274, and calends of April, 1275. No doubt the king was able to do this owing to the rapid increase in the revenues of the port.

It will be shown later that little of the walls and towers above ground can have been built before Boccanegra's death. Much of the large expenditure must have been on the costly work of making the port, but much also may have gone in laying the foundations of the walls, which are necessarily of considerable depth.¹

¹ Abbé H. Aigon (*Aigues-Mortes, Ville de Saint Louis*, Nîmes, 1908) says the foundations are 7 metres deep, but I do not

know on what evidence. It is certain, however, that the foundations must be of considerable depth.

The walls are strengthened by three angle-towers (the place of one on the north being taken by the great tower), and along the north-east by two wall-towers also. There are five gates between double drum-towers, and five posterns in towers which are oblong in plan and have relatively little projection.

The curtain-walls are about 30 ft. high to the broad paved walk at the top, and 8 ft. to 9 ft. thick. Except for four courses, more or less, at the base there is now no appreciable batter above ground. Above the walk is a crenellated parapet approximately 6 ft. high.

Externally the battering base-courses¹ now visible consist of comparatively small stones with the longer dimensions generally vertical, but the courses above consist of large stones with the shorter dimensions vertical. Over the whole of the outer face of the wall, with the exception of the parapet in places, the stonework is bossed, i.e. a band one to two inches broad round the outer edges is dressed as for ashlar, the face within being left projecting and rough. The same treatment is seen in the later work at Carcassonne and in much other thirteenth-century work in the south of France.² The stones of the battering base show few masons' marks, but on the rest of the walls and the towers, and especially on the west front, these marks are very abundant; they are cut boldly and deeply on the rough part of the stone and frequently there are two marks on one block.

The inner face of the curtain towards the town is mainly of bossed work on the north-west and on the south-west, but mixed in places with ashlar having the same masons' marks. The short straight portion on the north is mainly of ashlar, but the inner face of the north-east curtain is of mixed ashlar and bossed work, the ashlar, which is large, being usually in the lower part of the wall and representing a late re-facing probably of the sixteenth

¹ There are usually four or five courses of the battering base still above ground, but between the château and the Porte de Nîmes there are nine such courses of quite small stones, whilst between the Tour de Sel and the Tour de Villeneuve at the east end of the north-east curtain, there are nine to ten such courses of moderately large stones.

² This method of dressing stone was used by the Romans, and a very fine example has been discovered at Corstopitum (Corbridge-on-Tyne). It was revived in certain areas, including the south of France, in the thirteenth century and again in the sixteenth century. Stone so dressed is often said to be 'rusticated.'

century. At the south-east end of this curtain the ashlar not only re-faced the wall but blocked up the loop-recesses. On the south-east curtain the section east of the great gate is wholly ashlar, except the battering base, whilst south of this gate the base and the part above the loop-recesses are of bossed work, but the middle section, which contains the recesses, is of ashlar. This is true also of the section of the south-west curtain between its eastern postern and the angle-tower.¹

As a rule the interiors of the loop-recesses, and the sides and soffits of the arches that carry the external stairs of the gatehouses and angle-towers are of ashlar.

There are two distinct kinds of loop-recesses in the lower part of the curtain walls (plate v). Along the south-east front and between the south angle-tower and the south postern on the south-west front, the recesses are lofty and have pointed soffits (plate vi, 1). At the base there is a stone seat on each side with a rounded edge carrying a shallow fillet. About 7 ft. 6 ins. above the bottom of the recess there is on each side a projecting moulded string of stone, filleted, and with the lower face rounded. The upper surface has a horizontal rebate, and there can be little doubt that these strings were intended to carry a wooden platform which converted the recess into one with two floors, so that two archers could be active at the same time. The loop-opening at the back of the recess begins with a long narrow oblong stone frame, behind which is the splayed slit 15 ft. to 17 ft. long, narrow in the outer face of the wall but spreading out fan-wise at its base, which has considerable plunge so that the loop was effective almost to the very base of the wall.² The masonry of these loop-recesses is of high quality.

Some of the recesses of this type are walled up flush with the inner face of the curtain. Others have the loop-slit walled-up for about half its height or more, whilst in some a loop for an arquebus or musket has been constructed in the walled up portion (plate vii, 1), these loops likewise having considerable plunge.

¹ The extreme face of the walls has been repaired in places, and especially on the south-west front. The repairs have been carried out partly by the insertion of new stones and partly in a brownish cement or with blocks made of cement. The most

recent, however, have been done with white stones which have a very formal and chamfered 'bossing.'

² I have seen no other loops in France or England which so efficiently protect the base of the wall.

The other type of recess occurs in nearly all the rest of the curtain (plate VI, 4). It is broader, has a round-arched soffit, and its base is from 3 ft. 6 ins. to 7 ft. above the ground-level; on either side is a stone seat with a rounded and filleted edge. The loop is a narrow slit with a fan base in the outer face of the wall, splayed to an oblong opening in the inner face, the lower edge of this opening being about 3 ft. 6 ins. above the floor of the recess. The base of the slit is several feet above the level of the ground outside, and notwithstanding its considerable plunge this type of loop does not command the base of the wall nearly so well as the first type. The masonry of the round-headed recesses is good, but is not of the same excellence as in the high recesses.

The pointed recesses are from 16 to 21 ft. apart, whilst the round-headed recesses are 36 to 40 ft. apart, or double the distance. Taking into account that the pointed recess allowed two archers to shoot at once whilst the round-headed recess gave room only for one, it will be seen that the curtain provided with the pointed recesses could discharge four times as many missiles as an equal length of curtain provided with recesses of the other type. On the other hand the form, number, and position of the pointed recesses seriously reduced the strength of the wall and made it less able to withstand the shocks of projectiles or attacks by mining or the battering-ram. It may have been thought that this arrangement could safely be adopted because the lagoons and swamps surrounding the town prevented the setting up of any powerful engines of war, and that it was against escalade and breaching by means of the 'cat' that defence was mainly needed. The nature of the surroundings made any undermining, in the literal sense of the word, practically impossible. Probably, however, it was the recognition of the weakness caused by these recesses which led to so many of them being filled up later in the south-east end of the north-east curtain and the north-east end of the south-east curtain, where there were possibilities of a land attack.¹ It is noteworthy that the round-headed recesses are not only less numerous, but they are placed much higher in the wall.

¹ There are five of the large loop-recesses now built up flush with the wall-face between the Tour Villeneuve and the Porte des Cordeliers, seven between the latter and the Porte de la Reine, and four on the

other side of this gatehouse. The later round-headed recesses are, however, still open except along the north-west curtain, where many of them are walled up.



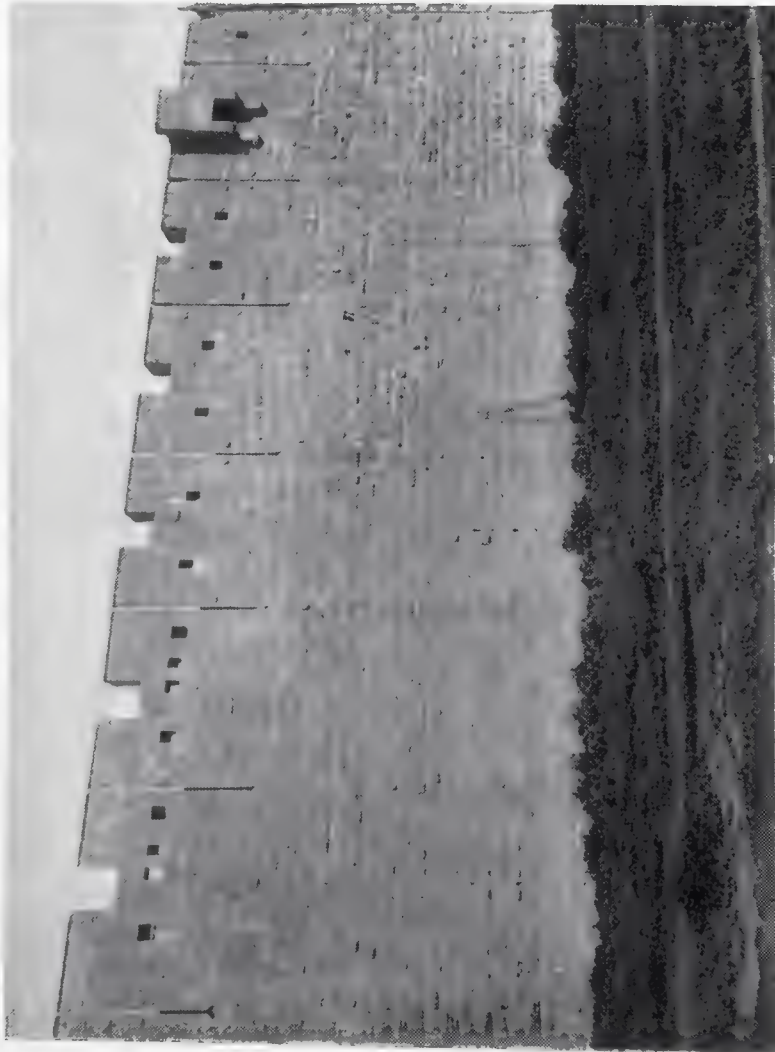
Wall-face towards town : loop-recesses of late design.



Wall-face towards town : loop-recesses of early design.



Wall-face towards field : late loop-slits.



Wall-face towards field : early loop-slits.

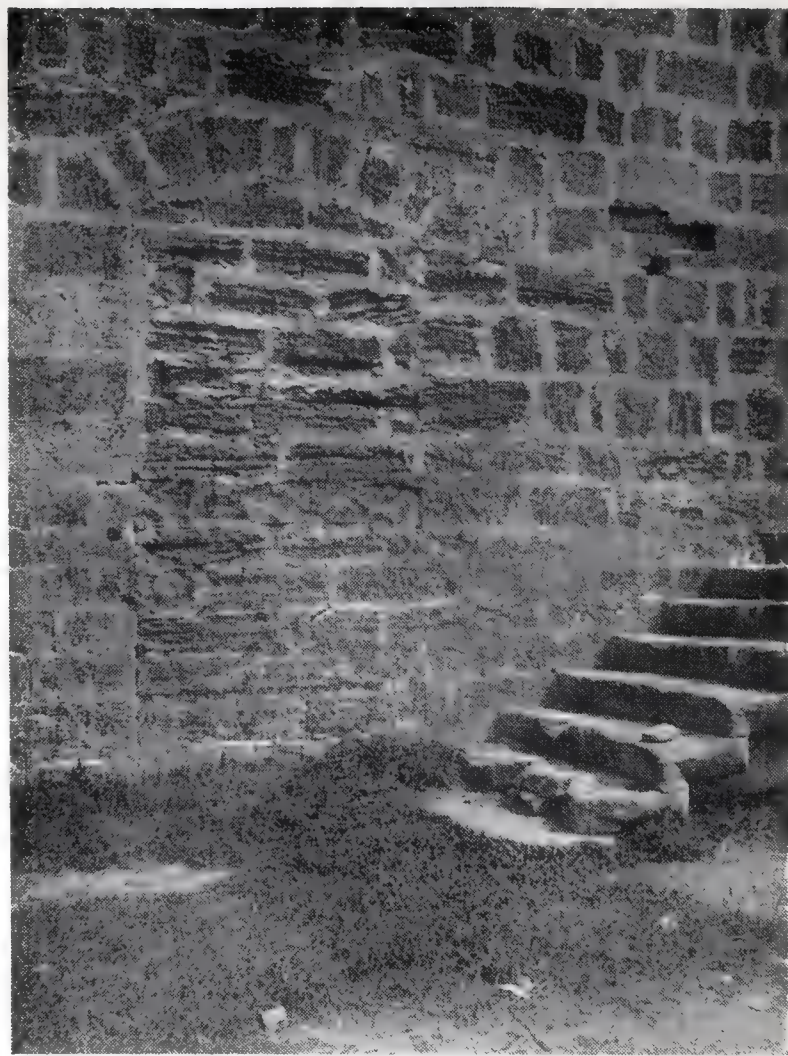
CURTAIN WALLS, SHOWING CHANGE OF DESIGN.



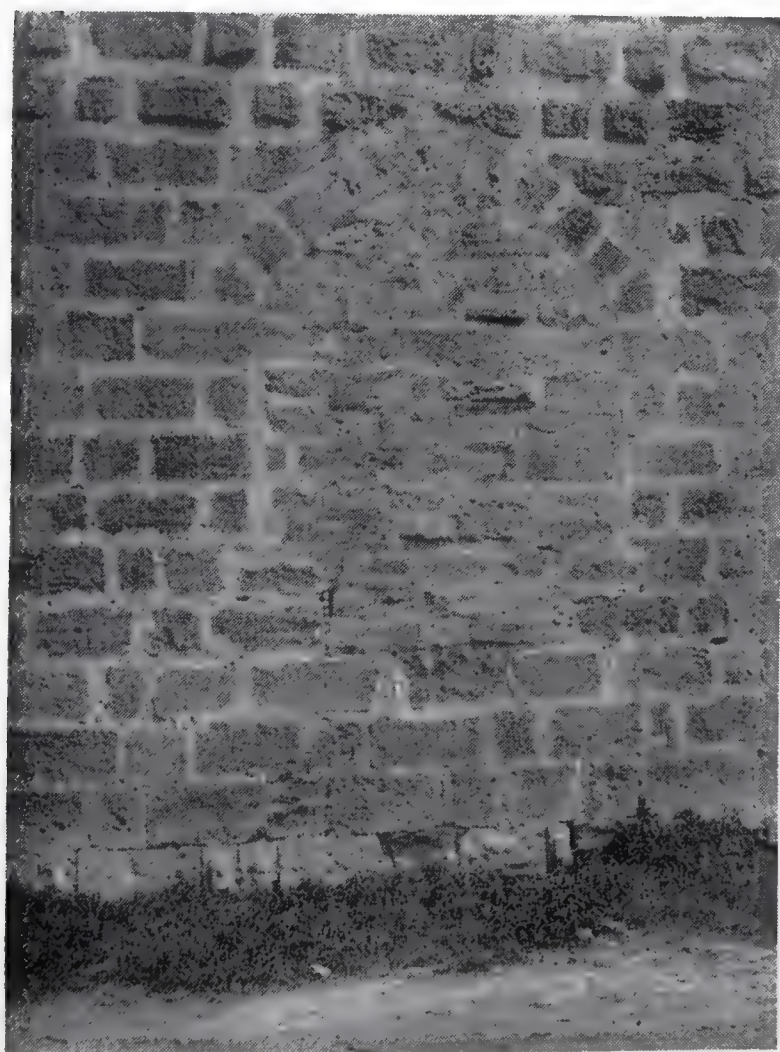




1. The first form.



2. Intermediate form.



3. Intermediate form.



4. Final form.

DEVELOPMENT OF LOOP-RECESSES.

The construction of broad loop-recesses in the lower part of the curtain-wall is a remarkable feature of the Crusaders' Syrian stronghold (Krak of the Chevaliers), which is considerably earlier than Aigues-Mortes, but there the wall is on the edge of a cliff far out of reach of engines of war. Other eastern fortresses of the same period show the same feature to a smaller extent. In Conway and Carnarvon castles there are large loop-recesses in the curtains, but in the former they are at a great height, and in the latter, even if damaged by 'perrières' which the most likely assailants were unlikely to possess, their position made them impracticable as breaches for assault. The closest parallel in any castle in this country is probably to be found in the loop-recesses of the outer curtain at Beaumaris.

Recesses of a similar kind were also used in the town walls of Tenby, King's Lynn, and Yarmouth, but in the last two cases only at the top of a high bank.

The question at once arises whether the two distinct types of recesses at Aigues-Mortes represent different periods of construction, and, if so, which is the earlier. From their general appearance, workmanship and effectiveness in active defence, it would seem at first sight that the pointed recesses must be the later development. It was found, however, that the pointed recesses also occur in the ground-floor chambers of the gatehouse on the south-east curtain and of the east and south angle-towers, whereas the upper floors of all these towers have the round-headed recesses. Further, it was observed that in several places, and notably along the western half of the south-west front and along the north-west front, below the comparatively short loops of the round-headed recesses, there is in the outer face of the wall the fan-shaped base and part of the stem of an earlier loop. Finally it was found possible to trace these lower original loops throughout the whole length of the curtain, including most of the towers, but not including the curved part of the short north section. In many cases only the fan base of the early loop remains in the top course of the battering base, and in some instances, especially on the south-west front, it has been more or less masked by repairs. Along the north-west front, however, there is a considerable length of the early loops in the lower part of the curtain. The level

of these loop bases corresponds with the level of the bases of the complete long loops on the east front. As a rule there is one of the early low bases below each loop from the round-headed recesses and also one half-way between, but along the north curtain these relative distances are not maintained.

It is therefore quite clear that the pointed loop-recess is the earlier type, and that when the foundations of the wall were laid it was intended to defend the entire circuit with recesses of this kind. At a later stage the simpler round-headed recess at wider intervals was adopted, probably in order to avoid so much weakening of the wall, and perhaps also for reasons of economy. There is interesting evidence, however, that before the nature of the change was finally settled some intermediate forms were tried. At the end of the north-east curtain, between the Tour Villeneuve and the Tour de Sel there are nine loop-recesses 26 ft. 6 ins. apart, now walled up. They were 5 ft. broad, 11 ft. high to the springing, and 12 ft. high to the crown of the somewhat flat segmental arch at the top. The loops in the outer face of the curtain are long, their bases being at the level of the earliest loop bases.¹ The bases of the recesses are only 1 ft. above the level of the ground inside the wall (plate vi, 2). It is noteworthy that loop-recesses of this form occur in the main chamber of the Porte Saint-Nazaire at Carcassonne. Northwards in the same curtain, between the Tour de Sel and Porte Saint-Antoine, are six loop-recesses 30 to 33 ft. apart, now likewise walled up. Their bases are 6 to 7 ft. from the ground and they were 7 ft. to 7 ft. 6 ins. broad, and 7 ft. high to the crown of the arch, which is pointed and has comparatively flat curves (plate vi, 3).

We have now to see whether there is historical evidence concerning the date and occasion of this change of design. In 1285 Philippe le-Hardi died and was succeeded by his son Philippe le-Bel. On 14th November, 1289, by order of the king, Adam de Montceliard, seneschal of Beaucaire, made a report to him on the condition of the port and town of Aigues-Mortes and the works that were still necessary.

¹ Along this section the outer face of the curtain batters for ten courses above ground

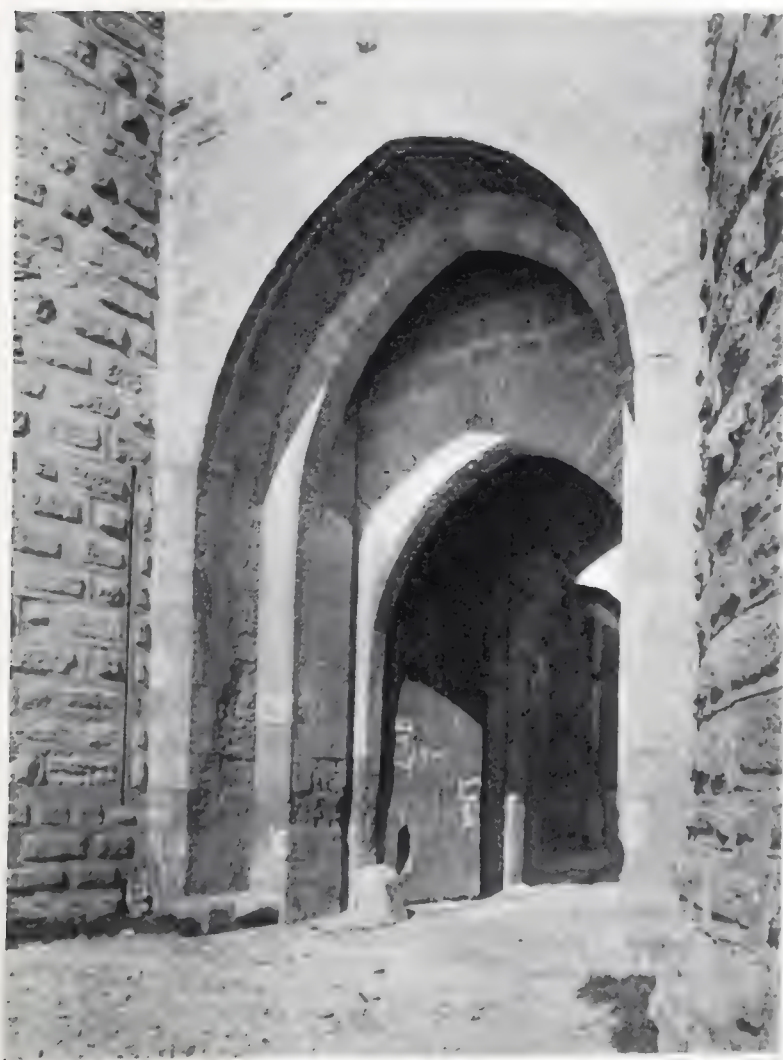
level; a considerably greater height than elsewhere.



1. Loop-recess of first design altered for use of arquebus.



2. Loop-recess of late design altered for use of cannon.



3. Portal of a great gatehouse (Porte de la Reine).



4. Portal of a postern (Porte de l'Organe).



The document is signed "in Aquis Mortuis in domo turris," and the seneschal sets out at length the very considerable works that require to be done on the port as such, and reports that he has made a favourable agreement with one Nicolas Cominelli for the carrying out of these works. He then goes on to speak of the walls, concerning which he has consulted the local officers and has had necessary measurements taken. He finds that there remains to be built 1,667 'cannes'¹ and six 'pans' of gates, towers and posterns (posterillis), and 1,580 'cannes' and 5½ 'pans' of plain wall. He has also ascertained that if the whole work is given out at a fixed scale there are contractors who will undertake it at the rate of 4 livres 8 sous per 'canne',² taking one 'canne' with another, or will complete it for a lump sum of 12,000 livres. The masters who are already building the towers and posterns will continue the work and will undertake to raise the towers to a height of 4 'cannes' above the plain walls.³ He thinks, and the officers whom he has consulted agree, that if the king wishes to complete the work at his own expense, it will cost 20,000 livres or more. He also considers that it will be more advantageous to give the work out on the proposed scale, rather than allow matters to go on as they have been doing.

It is clear that at this date the walls were very far from complete. Boccanegra had not lived long enough to see the work advanced beyond, at most, the foundations, and Philippe-le-Hardi seems to have let the building drag on, probably because he was fully occupied in other parts of his kingdom, and amongst other things was carrying out extensive works at Carcassonne. Seneschal Adam de Montceliard and his advisers had good reason for thinking that a change was necessary in the arrangements at Aigues-Mortes.

¹ Pagézy (op. cit.) says that a 'canne' was a measure in common use in Hérault before the adoption of the metric system. It was equivalent to 1.9874 metres, and was divided into 8 'pans,' and each 'pan' was divided into 9 'menus.' Littré (*Dictionnaire*) defines it as a measure of length employed in various countries and especially in Italy; its value was not constant, but at Naples the 'canne' was equivalent to 2.29 metres. Street in his *Gothic Architecture in Spain* quotes the

fifteenth-century contract of Guillermo Sagrera for the erection of the Exchange at Palma, which is to be eight 'canas of Montpellier' in height, and he states that a 'cana' was equivalent to two yards three inches of Spanish measure.

² Rather more than £16 of present money.

³ It is noteworthy that the actual height of the towers agrees fairly well with this stipulation.

From the measurements quoted it is evident that in 1289 the greater part of the walls and towers as we now see them had still to be built, and it is reasonable to conclude that the changes in design correspond with the time when Philippe-le-Bel took steps to complete the fortifications. It is noteworthy that the round-arched recess, with filleted seats at the sides and a loop with considerable plunge, is the final form of loop-recess adopted at Carcassonne, where it occurs only in the latest parts of the work, such as the upper parts of the Tour de l'Evêque, and in the Tour de Trésau and the magnificently built curtain adjoining it. There are good reasons for thinking that the Tour de Trésau and the section of curtain referred to were in fact built by Philippe-le-Bel after his father's death, and it is not improbable that he also completed the Tour de l'Evêque. Further, the first and second floors of Philippe-le-Bel's bridge-tower at Villeneuve-lès-Avignon have loop-recesses of the same type, and this tower is built of bossed stones in the lower part and ashlar towards the top, a difference which is likewise seen in the angle-towers and some of the postern-towers at Aigues-Mortes.

If my view as to the date of the changes in design is correct, it is possible to state fairly accurately how far the works had progressed when Adam de Montceliard made his report.

The north-east curtain was up as high as the rampart walk, the south angle-tower was about the same height, and the east angle-tower¹ and the towers of the Porte de la Reine were a few courses higher. The south-east end of the north-east curtain was probably several feet high, but as the recesses are all walled up this point cannot be ascertained definitely. The rest of the north-east curtain and its various towers was little if any higher than the top of the battering base. The south-east end of the south-west curtain was up to the level of the rampart walk or a little below, and the adjacent postern was probably about the same height. The rest of this curtain was

¹ In the outer wall-face of this tower, somewhat below the level of the floor of the upper chamber, there are two loops begun and then walled up and at the same level three loop-bases only partially worked in the stones. They indicate that the original

intention was to provide the upper chamber with five loop-recesses, as in the lower chamber; they also show that the loop-bases were worked in the stones after the latter were placed in position.

nearly 3 ft. 6 ins. above the battering base, and the posterns may have been at the same height, but the gatehouse-towers and west angle-tower were not so high. The south-west end of the north-west curtain had not risen above the battering base, whilst the rest of it was from 3 ft. 6 ins. to 4 ft. above the base. This at any rate was the state of matters when the change of design occurred, whether that change was contemporaneous with the seneschal's report or not.

After the report of the seneschal in 1289, more rapid progress was made with the work of erecting the walls and towers, and it may fairly be assumed that they were complete in 1307, when Aigues-Mortes was made the place of imprisonment of 45 out of the 65 Knights Templars arrested in the seneschalry of Beaucaire on August 13th in that year.

The rampart-walk, which varies from 6 ft. 3 ins. to 8 ft. in breadth, is paved with large flagstones, practically all original and many of them with masons' marks. The junction of the walk with the inner face of the curtain-wall is marked on the north-east and south-east by a bold cornice of two members, the upper being an ogee, and the lower a modified ovolo; the total projection is 1 ft. 3 ins. to 1 ft. 6 ins. and gives this additional breadth to the walk. The curves vary somewhat in different parts, and on the south-east the lower member is narrower and has a quicker curve than on the north-east, whilst between the east angle-tower and the mural tower to the north-west of it, the ogee string is quirked. On the south-west and north-west the cornice is simpler and consists of one ogee string, the projection being only 9 ins. at the north-east end of the north-west curtain, and 1 ft. 1 in. towards the south-west end, whilst along the south-west front it varies from 1 ft. 1 in. to 1 ft. 4 ins. The inner faces of all the great gates have a double cornice consisting of two ogee strings. This cornice must be regarded mainly as an ornamental feature; structurally the same result could have been obtained in a simpler way.

For the greater part of the wall-circuit there is no inner parapet, but along nearly the whole of the north-west curtain, and for some distance along the south-west, there is a comparatively modern inner parapet, probably dating from the sixteenth century when the château was built,

or possibly later still. It is about 3 ft. 2 ins. high and 8 ins. thick, with a plain slightly curved coping 1 ft. 1 in. broad and 5 ins. thick. The same parapet occurs along the inner faces of the great gatehouses (except the northern gate on the north-east curtain and the eastern of the two great gates on the south-west curtain) and the east and south angle-towers, where the walk is much narrower than elsewhere.¹ There are remains of an older, thicker (1 ft. 1 in.) and less carefully built parapet on either side of the east angle-tower, and along the inner face of the south-eastern gatehouse (Porte de la Marine) on the south-west front. A high looped inner parapet, not earlier than the sixteenth century, extends from the Porte de Nîmes to the château.

The battlemented outer parapet is perfect and is of the same type throughout the entire circuit of the walls, with the exception of the 'chemin de ronde' of the great tower, but there are differences of details and dimensions in the various sections into which the curtain is divided by the towers (fig. 4). It is probable that these variations are due to the different sections having been entrusted to different companies or gangs of the masons, who followed their own ideas on points of detail. There are very few indications of modern repairs, but repairs were made and the battlements put into good order in the sixteenth century, some of the stones showing bossing characteristic of that period. The inner face of the parapet and the inner faces of the embrasures and loop-slits are of ashlar throughout, but the outer face of the parapet, like that of the wall below, is of bossed work on the north-west and north-east fronts; whilst on the south-east and south-west fronts there is a mixture of bossed work and ashlar, the latter predominating in most parts of the south-east front and the south-eastern part of the south-west front. The top of the parapet is now protected by a layer of cement about four inches thick.

The parapet is 5 ft. 6 ins. to 6 ft. 6 ins. high and as a rule 2 ft. 5 ins. thick, divided into merlons² 12 ft. to 13 ft. broad, and embrasures 2 ft. to 3 ft. broad. The latter are

¹ The south tower-walk is equally narrow, but has no inner parapet.

² Merlon is that part of a parapet which rises to full height between two successive

openings or *embrasures*. Sometimes the merlon is left quite solid; sometimes, as at Aigues-Mortes, it is pierced by a loop.

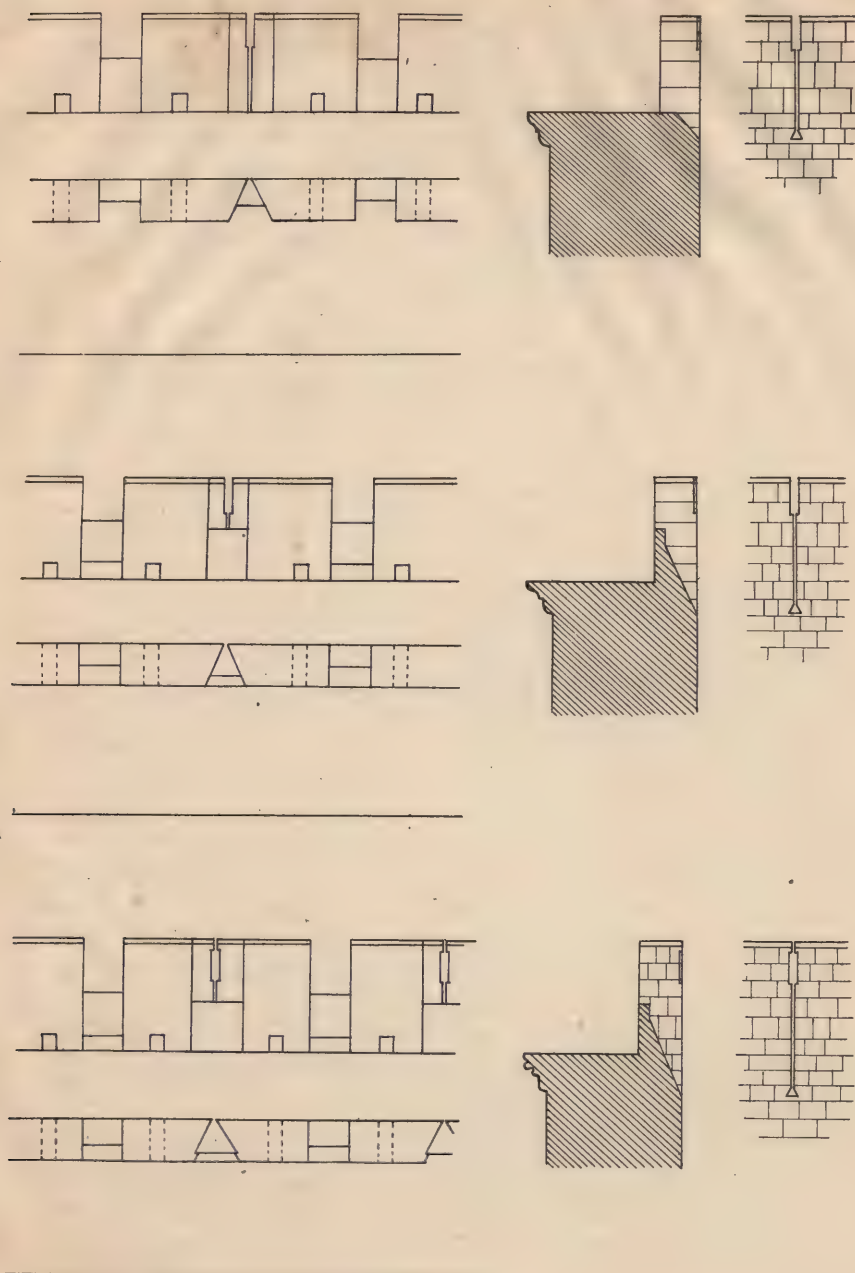
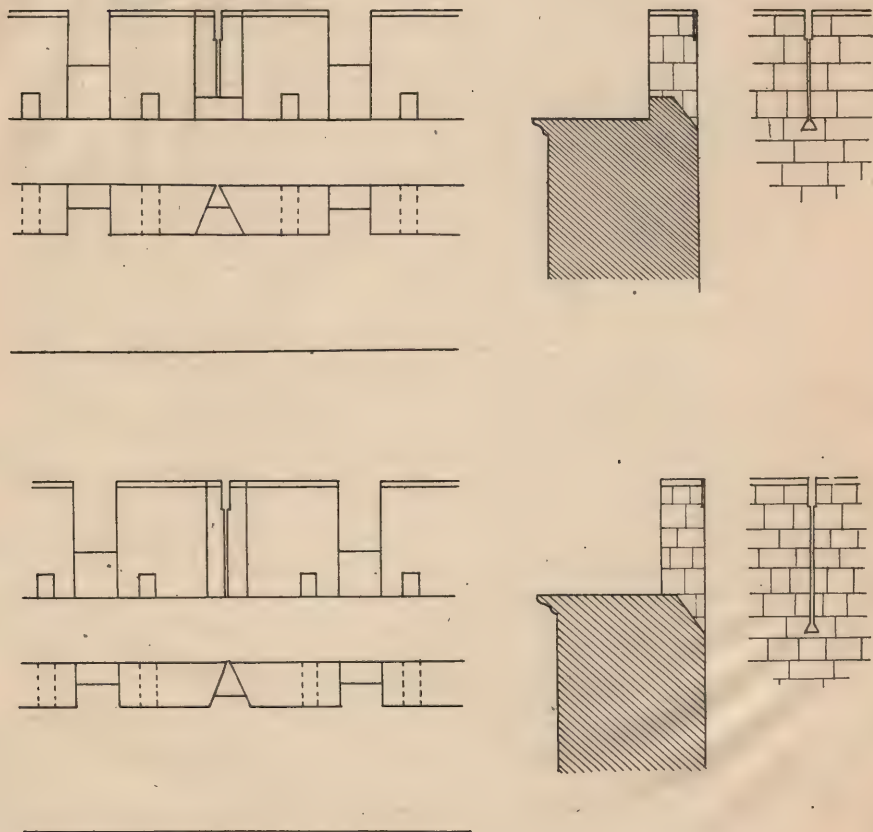


FIG. 4 (*a, b, c*). PLANS, ELEVATIONS AND SECTIONS OF PARAPETS OF CURTAINS, SHOWING VARIATIONS OF DESIGN.

recessed so that their outer parapet is only 1 ft. 1 in. to 1 ft. 5 ins. thick, with a height varying from 2 ft. 3 ins. to 3 ft. 6 ins., and along part of the north-east curtain there is a step about 10 ins. high in the embrasure, its parapet being 2 ft. 8 ins. above the step. The merlons are pierced

FIG. 4 (*d, e*).

mid-way by a splayed loop slit $1\frac{1}{2}$ ins. broad in the outer face of the wall, but 2 ft. 5 ins. at its inner face, and running out through the top of the merlon, which is unusual. For a distance of 1 ft. 6 ins. to 2 ft. from the top the slits are widened out to a breadth of $3\frac{1}{2}$ to 4 ins. at the outer face.

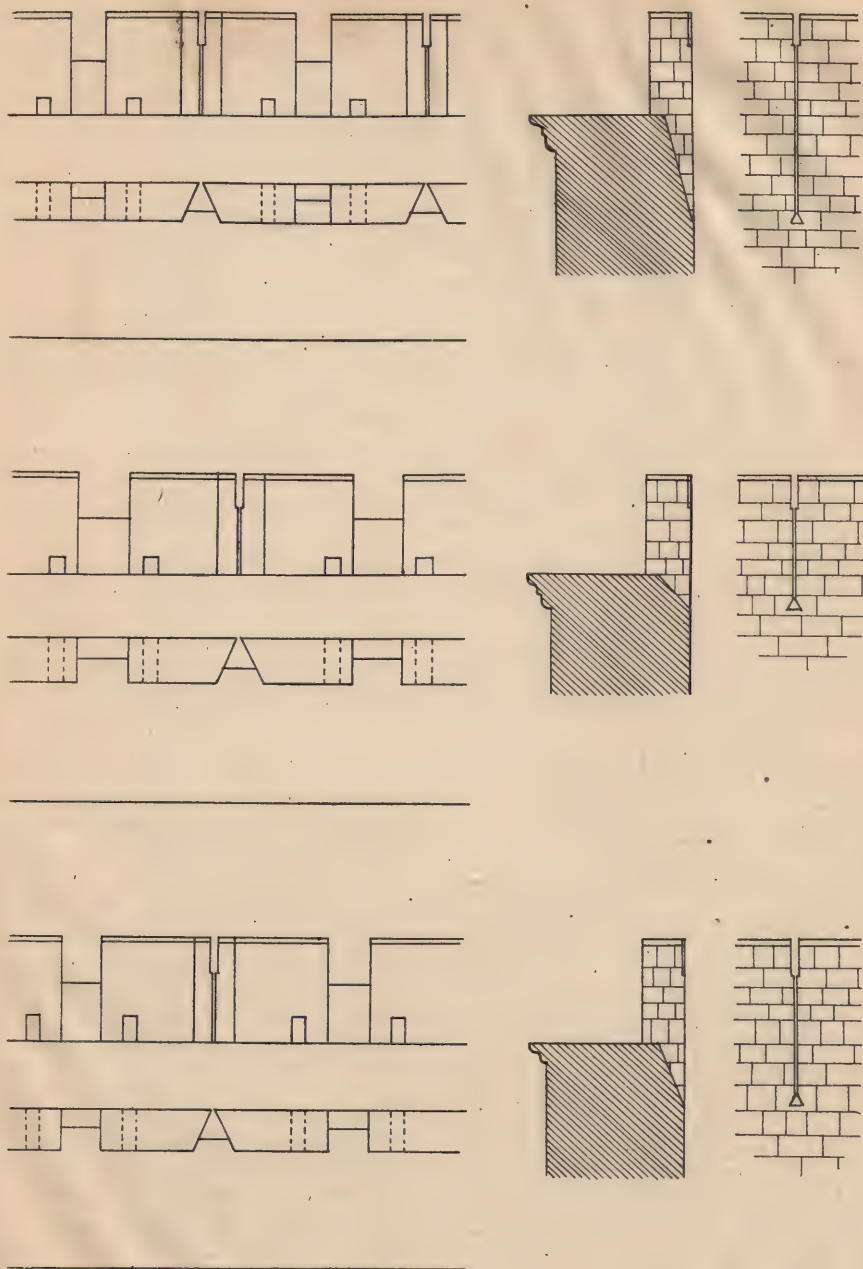


FIG. 4 (*f, g, h*).

The length of the outer slit of the loop varies from 6 ft. 9 ins. to 12 ft. 6 ins. the longest loops being in the north-eastern part of the south-east curtain, and the next longest in the middle of the same curtain (10 ft. 6 ins.), the south-eastern part of the south-west curtain (9 ft. 6 ins.) and the middle

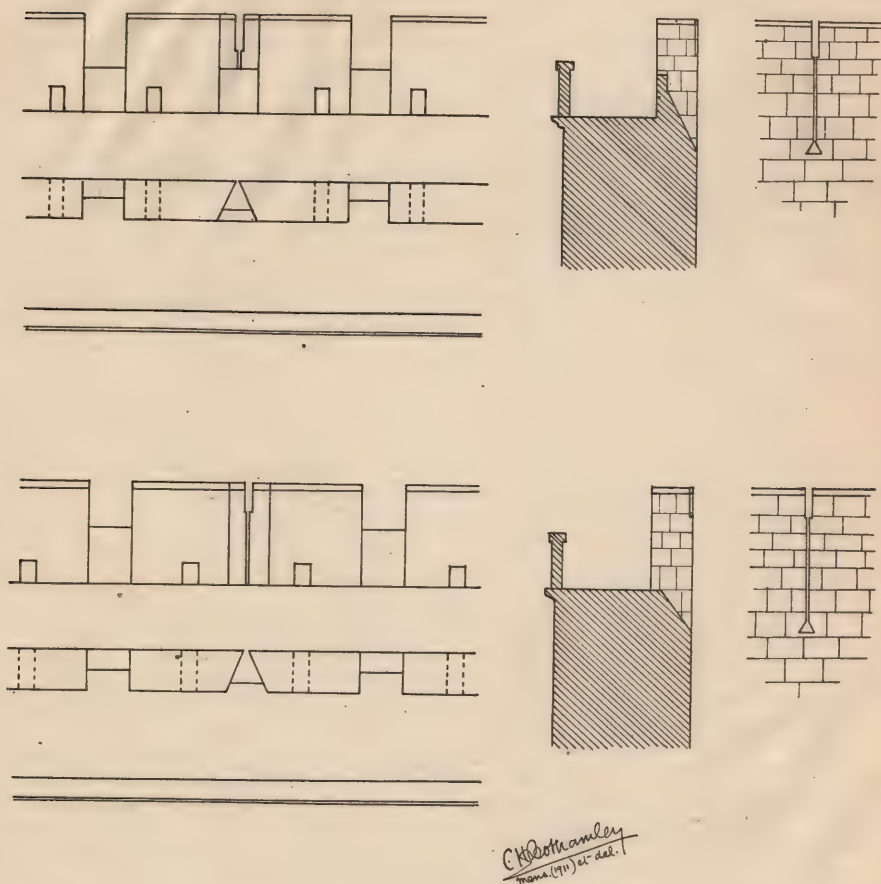


FIG. 4 (i, k).

of the north-east curtain (9 ft. to 9 ft. 3 ins.). In other parts their length is 7 to 8 ft. Along several sections of the curtain, and notably on the north-east front, the loops have an inner breast 1 ft. to 1 ft. 2 ins. thick and 1 ft. 4 ins. to 3 ft. high, but generally the loop-opening runs down to the surface of the rampart-walk. Every-

where the base of the loop has a steep fall or plunge so that missiles might be discharged as close to the base of the walls as possible, and the depth of this plunge determines the length of the loop-slit in the face of the wall.

There is no evidence of any hooks or other means of supporting hanging shutters to the embrasures of the curtain, but several such hooks can still be seen on the towers. At Carcassonne they remain at several points on the later curtain. Throughout the entire circuit, except the 'chemin de ronde' of the great tower, the outer parapet of the curtain is pierced with oblong holes for receiving the horizontal beams for the construction of wooden 'hourds' for the protection of the base of the walls. These holes are 1 ft. 3 ins. to 1 ft. 6 ins. high and 8 ins. to 11 ins. broad, and usually there are two at the base of each merlon. The distances between them vary in different parts of the curtain but generally they are alternately 4 ft. 6 ins. to 5 ft. and 7 ft. 6 ins. to 9 ft. apart.

With the usual care for sanitation characteristic of the thirteenth-century builders, the ramparts are amply provided with garderobes (fig. 5). Exclusive of those belonging to the angle-towers and gate-towers there are, or have been, no fewer than fifteen of these structures serving the ramparts only. They are corbelled out from the wall with an external projection of about 3 ft. 6 ins. and are constructed of slabs and ashlar; the internal width is about 2 ft. 9 ins. and the stone seat was reached by one or two steps. The height of the chambers is the height of the parapet, or a little more, and they had flat stone roofs, two of which remain on the south-west curtain. The corbelling begins some feet below the rampart-walk, so that the total vertical length of the garderobes is from 11 to 14 ft. The rampart garderobes are as a rule half-way between the towers.

Communication with the ramparts is amply provided for by broad flights of 40 to 44 stone steps, 4 ft. 9 ins. to 7 ft. broad, with 8 to $8\frac{1}{2}$ ins. riser and 1 ft. 3 ins. to 1 ft. 4 ins. tread, which run up on both sides of each of the greater gate-towers and the angle-towers. As a rule they rise from opposite sides of the gates or angle-towers, but in the case of Porte Saint-Antoine, both stairs rise from north-west to south-east, the south-eastern flight being carried round

east curtain (Porte de Nîmes). There is also a stair near the west angle which runs up from the platform in the château enclosure to the rampart-walk, but it is of later date than the others. Across each stair, about two-thirds of the way up, a cross-wall has been built some eight or nine feet high. Many of these are roughly but strongly built, whilst others, probably of later date, are well built of ashlar and are fitted with wooden doors.

In addition to these external stairs the rampart-walk can be reached from both towers of each of the greater gates (except that on the south-east front), and from each of the angle and wall-towers, and all of these are in communication with the ground-level by means of newel stairs.

Between the inner face of the curtain-wall and the houses of the town there is the broad roadway characteristic of so many thirteenth and fourteenth-century walled towns, and intended to secure free access to the ramparts and the rapid movement of the soldiers in case of attack. For a short distance south-east of the Porte de Nîmes this roadway has been encroached on by comparatively modern houses.

There is, however, evidence of erections, more or less important, against the inner face of the wall at certain points. Between the Porte de Montpellier and the château, at a height of about 8 ft. from the ground, there is a row of twenty-eight carefully cut oblong holes, 1 ft. high, 9 to 10 ins. broad and 5 to 6 deep, the distance between successive holes varying from 9 ins. to 1 ft. 3 ins. It is obvious that these holes supported the beams of some structure of considerable size and importance, and it is noteworthy that along this part the distance between the wall and the houses is greater than elsewhere. Similar but smaller holes in the wall-faces of the Tour des Bourguignons, and at certain points of the south-west curtain, likewise indicate the presence, at some former time, of some structures, probably of timber. At the level of the rampart-walk, in the wall of the Porte des Moulins, facing the town, there is a row of large oblong holes which probably held the ends of horizontal beams for supporting planks to increase the width of the rampart walk at this point.

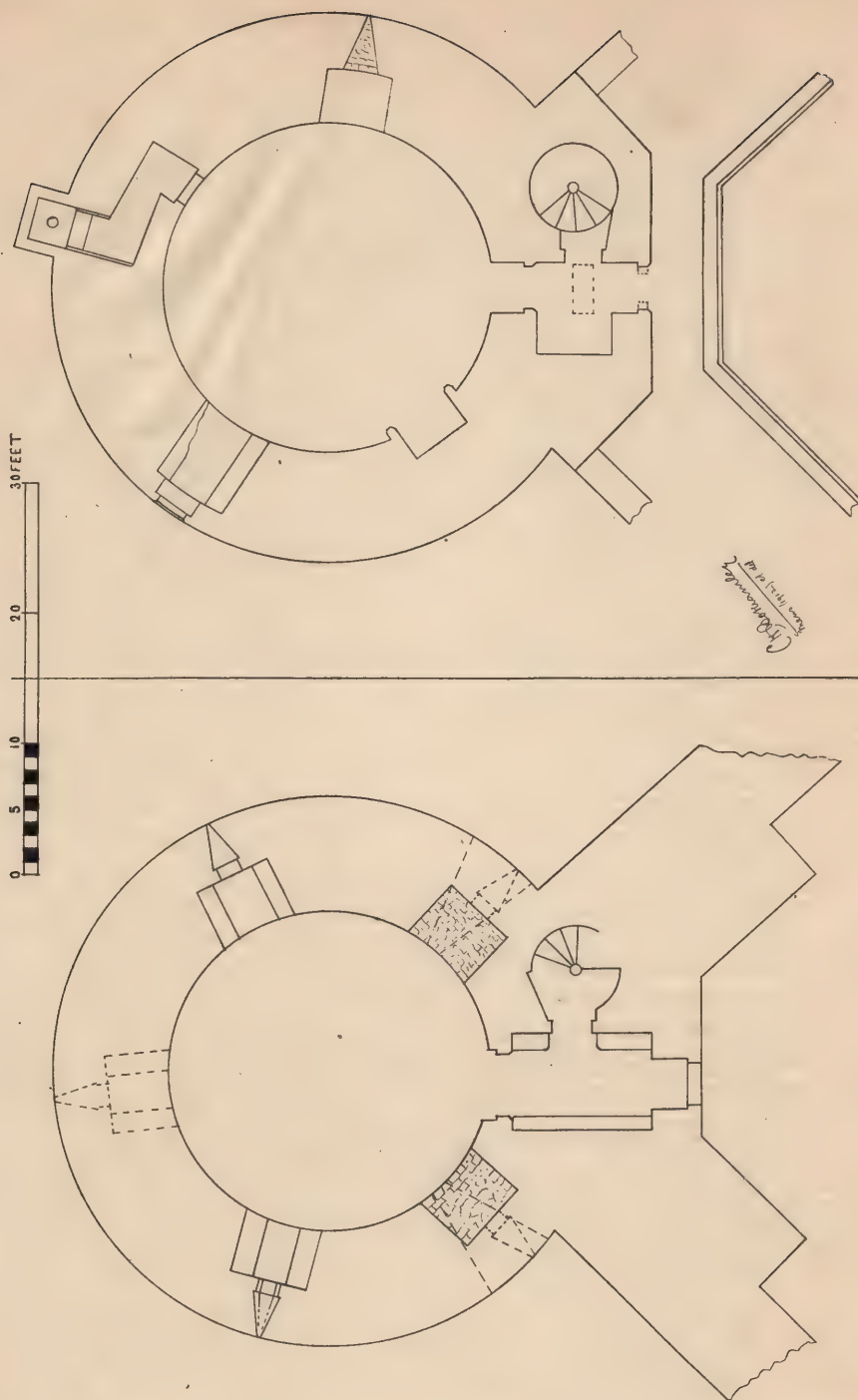


FIG. 6. TOUR DE VILLENEUVE (EAST ANGLE-TOWER): PLANS OF GROUND AND UPPER FLOORS.

ANGLE-TOWERS.

The three angle-towers are similar in general design (fig. 6), but show important differences in detail. Outside the walls they are round and consist entirely of bossed work. About one quarter of the cylinder is engaged with the curtain and the inner face is flat, truncating the angle of the curtain, and is built mainly of ashlar with the same mason marks as the bossed work, but cut smaller. The ashlar is, however, mixed with some bossed stones, especially towards the top, where repairs seem to have been carried out in the sixteenth century (plate XIII, 3).

On the ground-floors the original openings in the wall are narrow loop-slits, and the battlements at the top are of the same type as the battlements of the curtain, except in the west angle-tower where the loop-slits do not run through the tops of the merlons. On the town side a long flight of stone steps rises on each side, from the ground to the rampart-walk. Each tower is entered at the ground-level through a shouldered doorway, which gives access to a spacious lobby, and in one side of this is a doorway to a newel stair rising from the ground to the roof. At the opposite end of the lobby an inner doorway opens into the ground-floor chamber. In the east and south towers these chambers belong to the earlier design. They are arranged for active defence, and contain five loop-recesses of the high pointed-arch type, like those in the south-east curtain but larger (5 ft. 10 ins. wide). In most cases the recesses or their loops have been more or less completely walled up.¹ In both towers the bases of the recesses nearest the curtain have been filled up to a height of several feet, and gun-loops constructed in the filling in order to flank the curtain. These gun-loops are now walled up on the outer face.

The outer walls are 8 ft. 6 ins to 9 ft. thick. The chambers are vaulted in six compartments with slender ribs similar to those in the Tour de Constance, springing

¹ In the Tour de Villeneuve the middle recess has been built up flush with the inner wall face and the loops on either side of it have been altered for use with arquebuses

or muskets. The loops in this tower basement are 17 ft. long, whilst those of the Tour de la Poudrière at the south angle are 15 ft. long.

from finely carved corbels, some with human heads and some with animals. The central boss is also finely carved and is about 26 ft. from the floor.

The ground-floor of the west tower is of the second period. It has two round-arched loop-recesses with seats at the sides, and there was a third similar recess now built up flush with the wall-face. There is a fourth recess with a flat shouldered soffit and seats at the sides, but a plain wall at the back. The round-arched recesses are about 6 ft. above the floor and the gun-loops to flank the curtains were made in the wall below them. There is a fireplace with an almost straight segmental head flush with the wall. The room is vaulted in four compartments only, the corbels being well carved grotesque human heads and shoulders.

The upper parts of all three towers belong in the main to the second period. Each is reached from ground-level by the newel stair, and is also entered from the rampart-walk through a flat-headed shouldered doorway, which gives access to the chamber through a short lobby. In the west tower the doorway¹ is protected by a single mâchicoulis, which projects from the battlements of the tower. In the east tower there is an oblong opening or shaft for the projection of missiles, which runs up to the roof in the soffit of the entrance lobby of the tower. All three towers have round-arched recesses with seats at the sides, some of them having loop-slits, whilst others have large oblong windows in the outer wall. In each tower there is a fireplace with side-brackets and a large projecting stone hood. The vaulting-ribs are strong and plain, with a half-octagon section; they spring from large plain typical thirteenth-century corbels, and meet in a central circular boss, which is finely carved into foliage. In the east tower the vault has six compartments, in the south tower eight and in the west tower four.²

The east tower has a garderobe projecting from the tower, and reached directly from the first-floor room by a short passage with a sharp bend in it; the south and west towers have each a garderobe projecting from the

¹ This doorway is close to the parapet and not in the middle of the tower-face as in the other towers.

² The east tower has 24 ft. 6 ins. internal diameter, with walls 8 ft. 10 ins. thick, and the south tower 27 ft. 6 ins. internal diameter, with walls 9 ft. thick.

curtain below the battlements, at some little distance from the tower, and reached by a long narrow passage in the wall from the stair between the ground and first floors.

The tops of all the towers are paved with flagstones sloping slightly from the centre, and the battlements are similar to those of the curtains. The newel stairs terminate in low turrets, in the wall of which there is an oblong opening commanding the top of the curtain. That in the west tower still has the external iron hooks for supporting the shutter that protected the opening. The head of the mâchicoulis over the door of the west tower is protected by a flat roof like that on the *Porte de la Reine*.

WALL-TOWERS.

Wall-towers other than angle or gate-towers occur only on the north-east curtain, where there are two alternating with the great gatehouses. These towers are semicircular to the field but flat, externally, towards the town, and consist of two vaulted chambers, one at ground-level, and one at rampart-level; they differ in detail both externally and internally. The *Tour de Sel*, between the two great gatehouses, interrupts the rampart-walk, but the *Tour de la Mèche*, like the gatehouses, has the walk carried round its inner face. The lower chamber of the *Tour de Sel*, vaulted in four compartments with plain half-octagon ribs springing from carved corbels, has three round-arched loop-recesses towards the field, the middle one being blocked up; their cills are about 9 ft. from the floor, so that they must have been reached by ladders, and they have no side-seats. There are no gun-loops flanking the curtains. On the south-west there is a large fireplace with a segmental arch but no projecting hood, and above it a large oblong window with splayed sides and base. To the south-east there is a chamber in the wall 7 ft. 10 ins. by 6 ft. 6 ins. with a pointed barrel-vault and to the north-west a similar but loftier chamber 11 ft. 9 ins. by 9 ft. 3 ins.; in its north angle there is a door into a garderobe in the wall, and the eastern half of the chamber has been provided with an upper floor by means of a rough barrel-vault.

The upper chamber (fig. 7), vaulted in seven compartments, has, towards the field two lofty round-arched recesses, with seats along the sides, reached by steps, and small oblong windows with flat shouldered heads at the back. There is a similar recess towards the town, and, on the same side, an exceptionally fine fireplace with moulded side-brackets and a very lofty hood (plate XIII, 4). On the south-east the external door from the ramparts opens on a flight

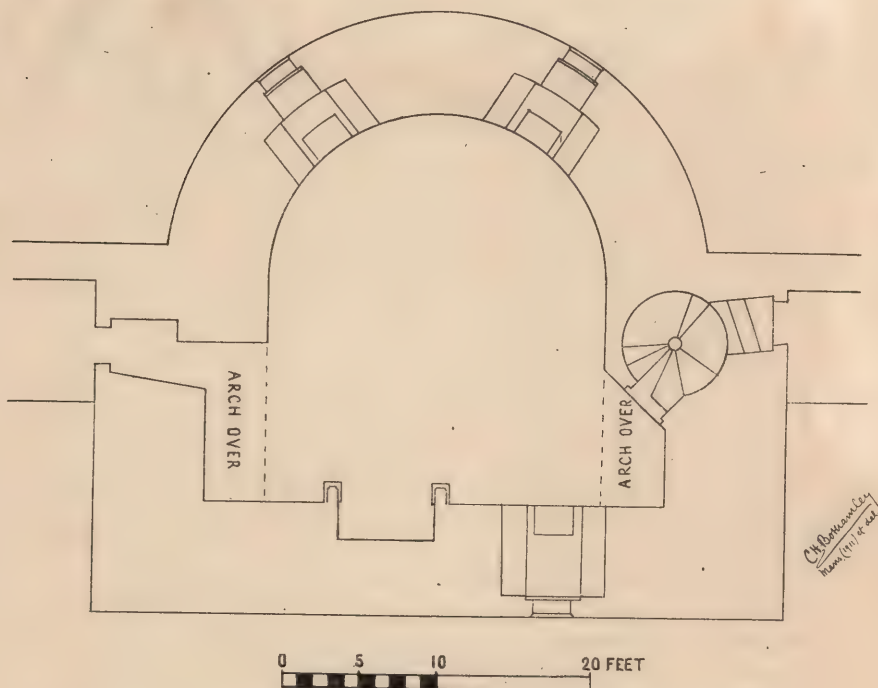


FIG. 7. TOUR DE SEL: PLAN OF UPPER CHAMBER AT RAMPART-LEVEL.

of three steps which *descends* to join the newel stair; on the north-west a flight of four steps rises from the rampart-walk to the door of the tower.

All the external doors of this tower are protected by single mâchicoulis which project from its battlements.

The Tour de la Mèche has a gun-loop on either side flanking the curtain but originally it had three loops about 10 ft. long. The basement of the tower is not accessible





1. Porte des Cordeliers (SE. curtain).



2. Porte de l'Arsenal (SW. curtain).



3. Porte de l'Organe (SW. curtain).



4. Porte des Galions (SW. curtain).

POSTERNS FROM OUTSIDE THE WALLS.

but it seems to have side-chambers like those of the Tour de Sel. The upper chamber, which is circular and vaulted in six compartments, has three round-arched recesses towards the field, the middle and largest one having seats along its sides and an oblong window at the back, whilst the others are simple loop-recesses without seats. On the north-west there is a good fireplace with side-brackets and a projecting hood, and towards the town, high up in the wall, a large window-recess with a segmental head. The garderobe in the angle between the tower and the curtain (a unique position at Aigues-Mortes) is reached by a short lobby off the newel stair. Both towers are entered by doors at the ground-level, as well as from the rampart-walk, and have newel stairs rising from ground-level to battlements. In the case of the north-western tower each of the three doors is commanded by a single mâchicoulis at the top of the tower. The battlements are similar to those of the curtain, but lower, and there is no provision for 'hourds.' The roofs are paved with flagstones.

LESSER GATES OR POSTERNS.

The five smaller gates or posterns are pierced in rectangular towers of shallow projection, such as became characteristic of many walled towns of the fourteenth century in the south of France. The projection is practically the same on both faces of the curtain, and the lower part of the tower is formed by two pairs of large piers or buttresses, with considerable batter at the base, between which runs the portal (plates VIII, IX). The upper part of the tower is an oblong chamber with octagonal angle-turrets finely corbelled out at some distance below the rampart-walk. Three of the turrets are solid and do not rise above the roof of the tower, but the fourth carries the newel stair to the roof and rises somewhat above its battlements. These turrets, except that carrying the stair, are essentially ornamental features. Their projection is so slight that it adds nothing to the efficient flanking of the curtain from the top of the tower, and so far as defence is concerned the same result would have been obtained by carrying up the tower as a plain oblong.

The postern on the north-west and the three on the south-west belong to the second building period, and are all of the same type with differences in details. The portal has pointed arches and is defended by a single mâchicoulis projecting from the top of the front of the tower; a short oblong shaft¹ for the projection of missiles with its upper opening in the postern-chamber and its lower opening in the crown of the first arch; a portcullis in a square groove with a broad open chase for the projection of missiles between it and the arch in front; a double-leaf door; a single mâchicoulis projecting from the top

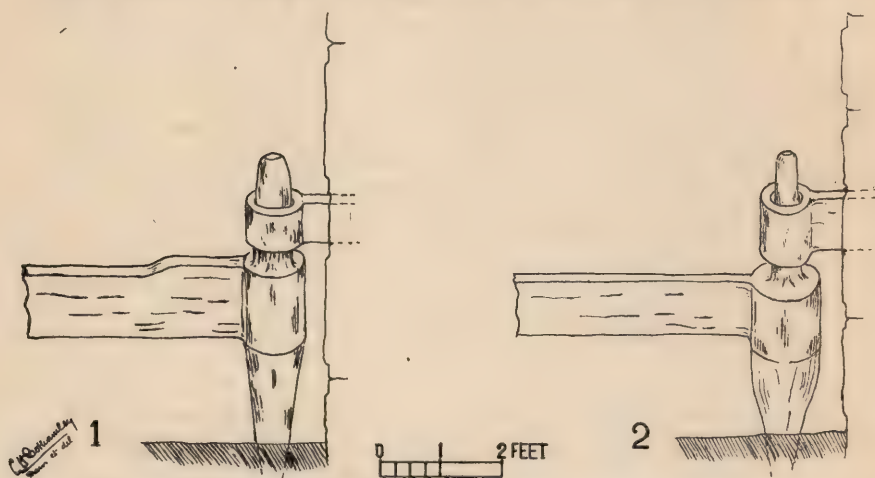
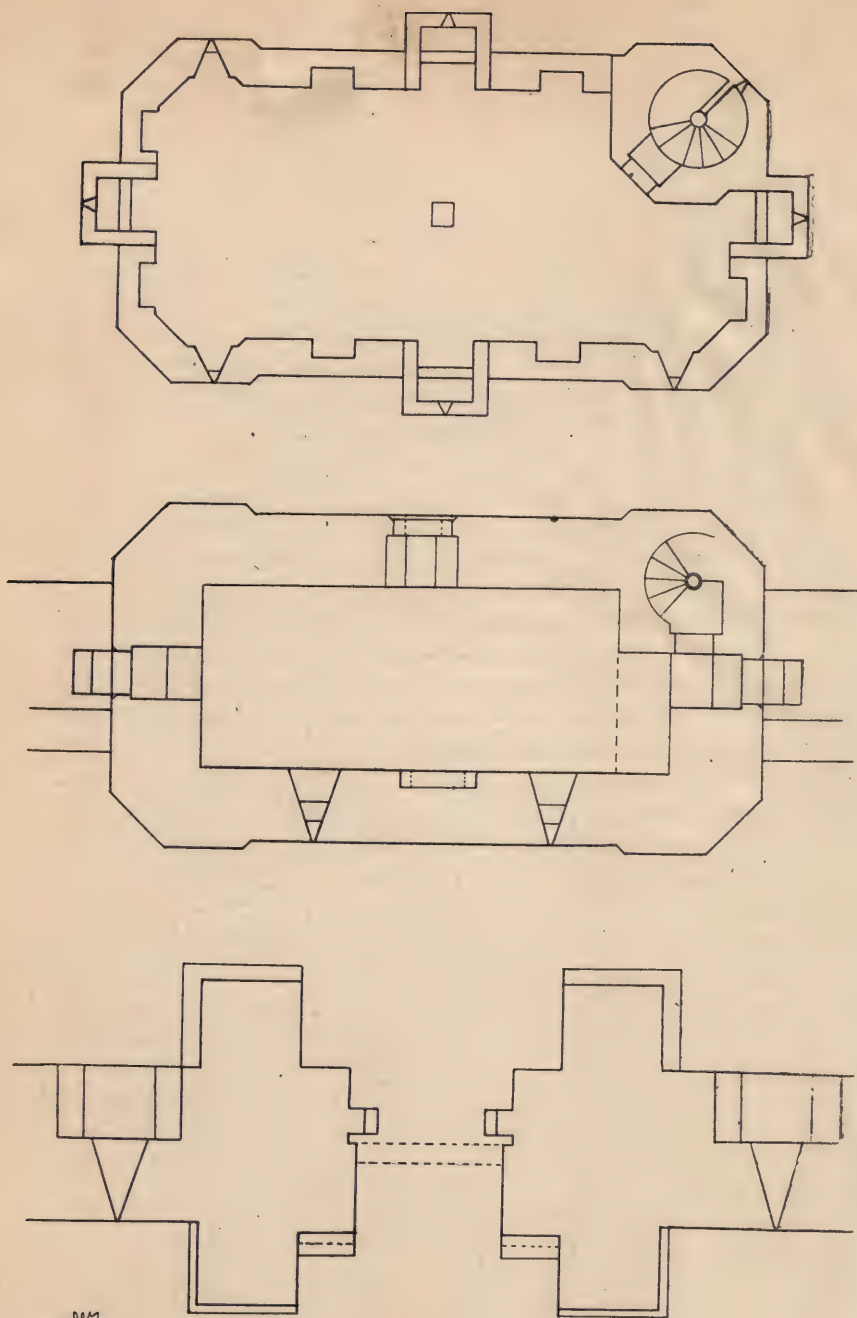


FIG. 8. PORTE DE L'ORGANE: HINGES OF SIXTEENTH-CENTURY DOOR.

of the tower over the inner face of the portal. In the Porte de l'Organe the sixteenth-century door remains. It is constructed of two layers of planks, one horizontal and one vertical, fastened together by large clinched nails, and has a long bar attached to one leaf and fastening over the other by means of strong iron rings and a stout pin. The bar extends over the full breadth of both leaves. Each leaf has three hinges, the two upper being of the ordinary, whilst the lowest one is of the pattern illustrated in fig. 8. A flat iron strip, extending nearly over the full breadth of the leaf, is firmly attached to it, and at the end near the wall carries an inverted iron cone with a short and narrower

¹ These shafts vary from 2 ft. 5 ins. by 1 ft. 1 in. to 4 ft. 3 ins. by 1 ft.



Ch. Botschinsky
mens. (1911) et aut.



FIG. 9. PORTE DE L'ORGANE: PLANS OF GATEWAY AND FIRST AND SECOND FLOORS.

cylinder projecting from its base. The lower end of the cone works on an iron plate or block of hard stone in the cill of the doorway, whilst a strong iron ring, firmly fixed in the wall, fits over the short cylinder above the cone. This arrangement prevented the door being lifted off its hinges by a crowbar or other lever applied at the bottom. Hinges of the same pattern exist on the doors of the *Porte de Nîmes* on the north-east curtain, and they were used in other town gates in the south of France in the sixteenth century.

A singular feature of the postern portals is the existence of stone seats on either side of the front arch; they have rounded and filleted edges like those in the loop-recesses (plate VII, 4).

The upper chamber of each postern interrupts the rampart-walk and is reached from it through a square-headed or shouldered door at each end, from four to seven steps descending to the present floor. In some cases this stone stair begins outside the door (fig. 9). This arrangement would make it difficult for an enemy who had secured a footing on one part of the ramparts to 'rush' a postern-chamber and charge the adjoining rampart. Each of the doors is protected by a single *mâchicoulis* at the top of the tower.

The chamber is vaulted in two bays of four compartments, separated by a pointed cross-arch without capitals or imposts.¹ The ribs are half-octagonal in section and spring from large triple-cleft corbels of thirteenth-century type; they meet in central circular bosses of well carved foliage. The vaulting-ribs, and as a rule the cross-arch, are constructed in 'tas-de-charge' for three or four courses.² Near the cross-arch in one of the vaulting compartments is a small opening about 14 ins. square, probably intended as a vent for the smoke from a fire on the floor or in a brazier. The ceiling of the eastern postern on the south curtain is blackened by smoke. In the outer wall of the chamber are two splayed loops with shouldered soffits,

¹ In the *Porte de l'Organe* on the south-west front the cross-arch is missing, and in its place there is a cross-vaulting rib springing from corbels.

² *Tas-de-Charge*. The lower courses of the arch are cut with parallel faces and

bedded horizontally instead of being cut as voussoirs and laid with their bedding planes radiating from the centre of the arc. *Tas-de-charge* stops and gives way to voussoirs as soon as the vaulting-ribs have begun to diverge. This mode of construction is seldom met with in this country.





1. Porte de l'Arsenal.



2. Porte des Galions.



3. Porte de l'Organe.



4. Porte de Montpellier (NW. curtain).

POSTERNS FROM THE TOWN SIDE.

one on either side of the cross-arch and between them, close to one side of the cross-arch and usually under a shouldered recess in the wall, is the opening of the shaft in the crown of the front arch of the portal. In the wall towards the town there is, in the *Porte des Galions* and the *Porte de Montpellier* (fig. 10), to right and left of the cross arch a recess with stone seats on one or both sides, and a large oblong window closed with a shutter. Whilst the *Porte de l'Organe* (which has no cross-arch) has only one such recess, and in the *Porte de l'Arsenal* the openings in the wall towards the town and one of the loops towards the field have been built up.

The flagstone floors of the chambers are comparatively modern, and cover the upper part of the portcullis-grooves and the chase in front; but, except in the south-east postern of the south-west curtain, their level is not much higher than that of the original floors.

The battlements of the postern-towers are similar to those of the curtains, but the parapets are lower (only about 3 ft. high) and there are no embrasures. The roofs are covered with flagstones sloping slightly towards the battlements from a central line.

A narrow newel stair rises from the rampart-chamber level to the top of each tower, and is reached by a narrow, square-headed door in one of the entrance lobbies. It is contained in one of the angle-turrets on the town side, and the upper part of this turret alone rises above the battlements. The doorways from the ramparts to the upper chamber are all protected by single *mâchicoulis* projecting from the battlements.

The postern on the south-east front (*Porte des Cordeliers*) belongs mainly to the first building period, and differs from the others in general aspect as well as in structural details (plate VIII, 1). It is narrower and the portal arches are loftier. The corbelling of the turrets is finely moulded, and in the south angle below the corbelling there is a bracket in the form of a long inverted cone with thirteenth-century leaf-ornament on its apex. The portal has seats on either side of the outer arch, and its defences are the same as in the other posterns, except that there is no shaft in the crown of the first arch. The rampart-chamber is entered from the rampart-walk through

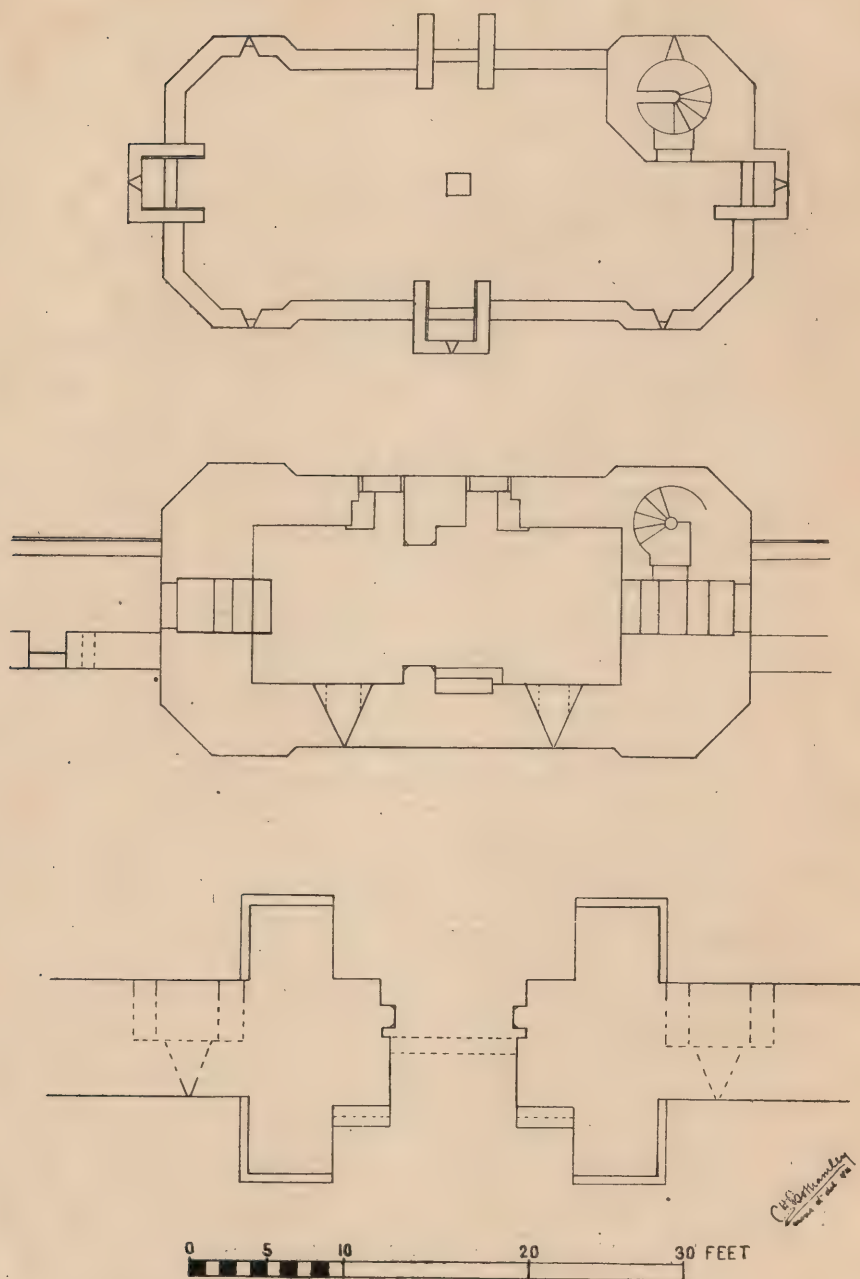


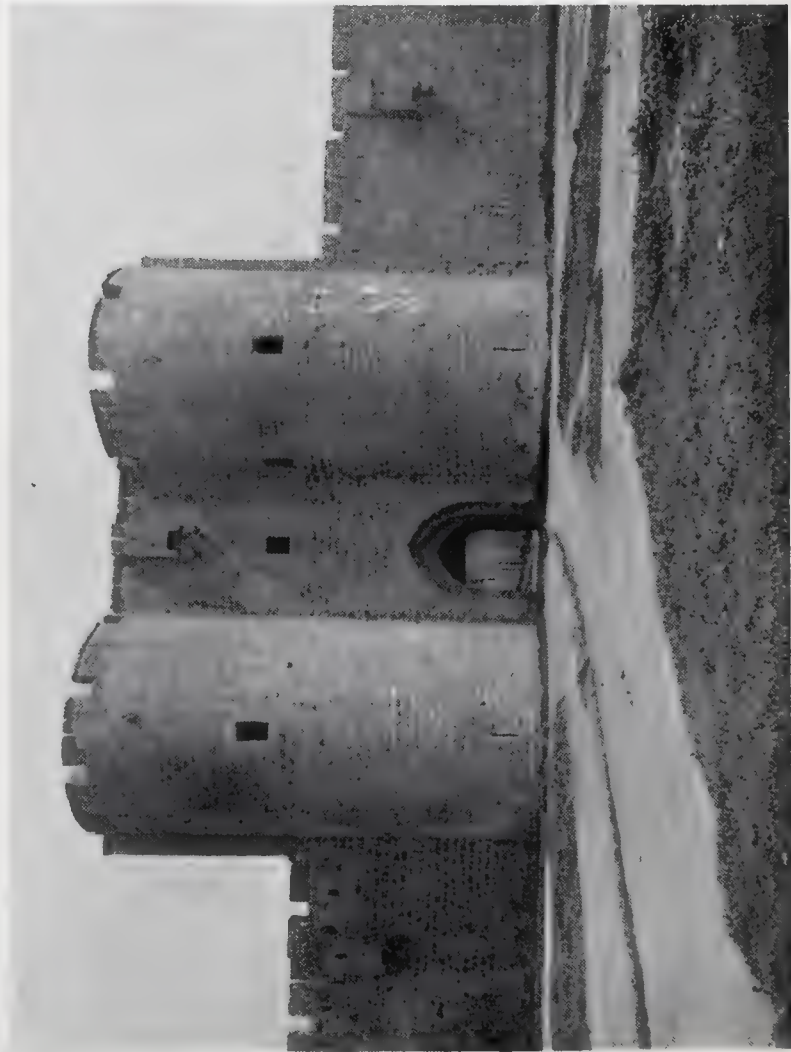
FIG. 10. PORTE DE MONTPELLIER: PLANS.



1. Porte de Nîmes (NE. curtain).



2. Porte de la Reine (SE. curtain).



3. Porte des Moulins (SW. curtain).



4. Porte de la Marine (SW. curtain).

THE GREAT GATEHOUSES.

shouldered doors, but the flat ceilings of the lobbies are not shouldered. The north-east door has a bar slot. The narrow square-headed door to the stair is in the east side of the south-west lobby, the stair being in the external south turret instead of in one of the turrets on the town side as in all other cases. The rampart-level chamber 18 ft. 10 ins. by 9 ft. 6 ins. has two bays of quadripartite vaulting with half-octagon ribs springing from plain, well-formed corbels. There is no dividing cross-arch, but the middle cross-rib springs from two large corbels very finely carved; on the south-east are two winged dragons with long pointed tails, fighting, and on the north-west a winged and eared animal (? a vampire bat) with a human head between its claws. The vaulting-ribs are constructed in 'tas-de-charge' for three courses, and they meet in central circular bosses with very finely carved foliage. In the south-east wall there is only one splayed and shouldered loop-recess, and in the north-west one oblong window, with a hinged shutter, at the back of a segmental-headed recess which has seats at the side with round and filleted edges. A peculiarity of this postern is that the floor of the chamber is level with the rampart-walk and originally was little if any lower, but the present floor covers the portcullis-chase.

THE GREAT GATEHOUSES.

The five great gatehouses are placed on the north-east curtain (two), south-east curtain (one), and south-west curtain (two), in the latter case alternating with the three posterns. All except that on the south-east curtain belong to the second building period, with the exception of their battering bases and the foundations. They are all of the same general plan, and consist of two bold drum-towers rising to a height of some sixty feet, and connected by a portcullis-chamber, below which is the passage (plate VII, 3). On either side of the gatehouse on its town face is a broad stone stair of 40 to 43 steps (plate XI, 3, 4) which gives access to the ramparts, and the rampart-walk is carried across the gatehouse outside its inner face, which is flat.

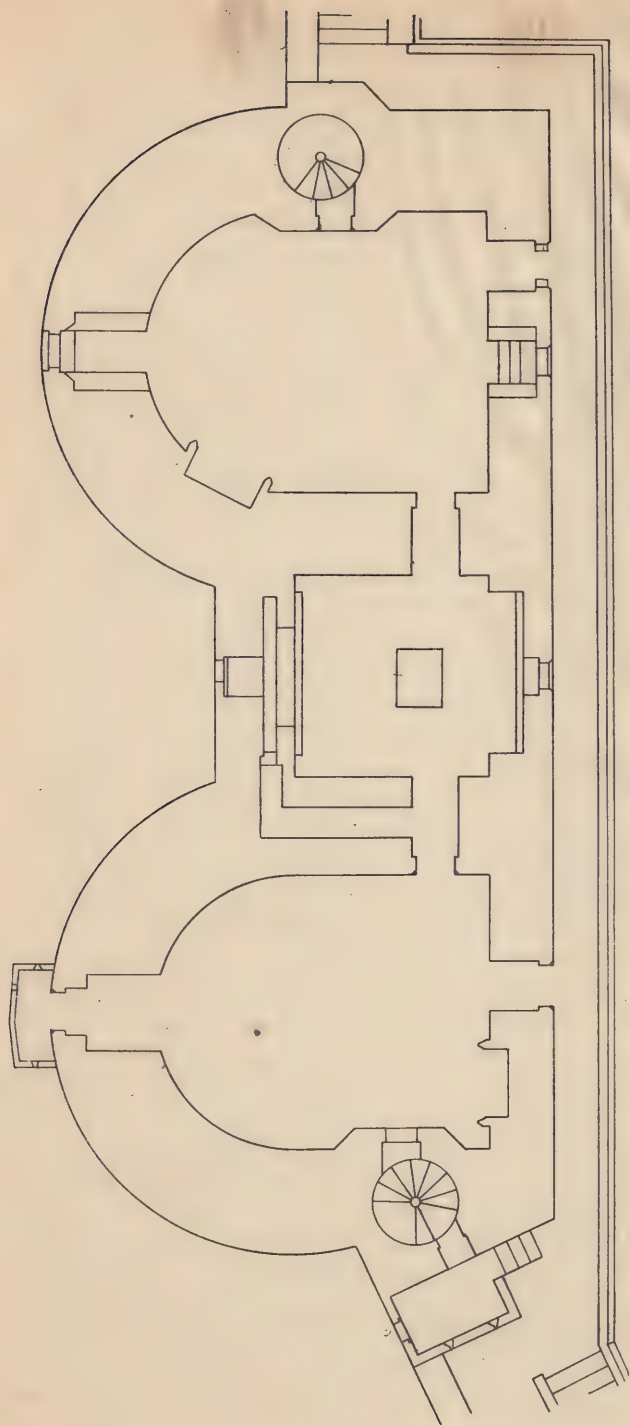
Except on the south-west curtain, each drum-tower consists of two principal vaulted chambers, one at ground-level and the other at or a little above rampart-level, each being entered by a square-headed or shouldered door. A newel stair rises from the ground to the battlements of each tower, and as a rule¹ at a point between the two floors, a long passage in the curtain-wall goes off right or left to a garderobe-chamber projecting from the wall. In some cases this passage is in two sections at different levels, connected by a stair, so that the garderobe is some feet above the level of the door from the stair. Obviously this is the best arrangement for cutting off the garderobe from the tower-chambers, and it illustrates the careful manner in which all the details, including the sanitation, were thought out.

The Port de Nîmes (*Vieille*, or *de la Gardette*) on the north-east curtain was the entrance to the town from the only road across the marshes and was therefore the most liable to attack from land (plate x, 1). It is the only gatehouse which has been provided with a drawbridge. The ground-floor chambers, vaulted in four compartments, with large corbels carved as grotesque heads, have each three loop-recesses towards the field, all more or less altered, and those flanking the curtain filled up and converted into gun-loops. Each chamber has a large and more or less ruined fireplace with a projecting hood. The north-west chamber contains a well and the south-east chamber a garderobe.

The chase or opening for the projection of missiles in front of the portcullis is continued up to the roof where it forms a long narrow oblong opening, and it has a breast-wall in the portcullis-chamber. Further, the north-west end of the opening is reached by means of a narrow passage in the north-west wall of the portcullis-chamber. There is a similar arrangement in the Narbonne gate at Carcassonne, where, however, there are passages to both ends of the chase.

The upper chambers (fig. 11) have large fireplaces; in the walls towards the field there are only very small openings, that from the south-east tower being a small shouldered

¹ The exception is the south-eastern gatehouse on the north-east curtain (Porte St-Antoine).



Chapelle de Nîmes

0 5 10 20 30 FEET

FIG. II. PORTE DE NÎMES: PLAN OF UPPER CHAMBERS.

window in a round-arched recess, and that from the north-west tower a small door (originally a window) opening into a small projecting balcony of late date, the walls of which are looped for muskets. There are larger windows towards the town (plate XI, 3). In addition to a door from each tower to the rampart-walk there is a door from the newel stair of the north-west tower, which opens into an oblong chamber or lobby, the walls of which are pierced with loops for muskets. This lobby has no roof and is a late addition.

Porte Saint-Antoine, also on the north-east curtain, is the largest of all the great gatehouses (plate XI, 1). Its outer doorway has somewhat elaborate mouldings and is an early fifteenth-century insertion. Originally the doors had hinges of the usual type but behind the arch of the second doorway there is a large beam with a circular hole 6 ins. in diameter in the under-side at each end. This is a sixteenth-century arrangement. The upper ends of the door-posts worked in these holes, and the lower ends worked in similar holes in stones in the ground (compare the Porte des Moulins). Above the inner door there are three finely carved brackets, apparently for statuettes, but they have neither canopies nor niches.

The ground-floor chambers have unusually fine fireplaces, and that in the south-east tower is exceptional in the elaborate moulding of its side-brackets and jambs, which seem to be a late insertion under the lofty thirteenth-century hood. The loop-recesses are round-headed and the loop-splays are rebated at their inner edges and in some cases hinges for shutters still remain. In both chambers a garderobe is reached through a door in the side of one of the loop-recesses. The vaulting of each chamber is in four compartments and the corbels are large and carved as grotesque heads.

The upper chamber of the north-west tower has one round-arched window-recess, with seats at the sides and an oblong window towards the field, but the south-east tower has three such recesses. The fireplaces are plainer and smaller than those in the ground-floor chambers. In the south-east chamber four of the vaulting-ribs spring not from corbels as in every other case, but from short chamfered vaulting-shafts with plain corbels and plinths.

In both the Porte de Nîmes and the Porte Saint-Antoine

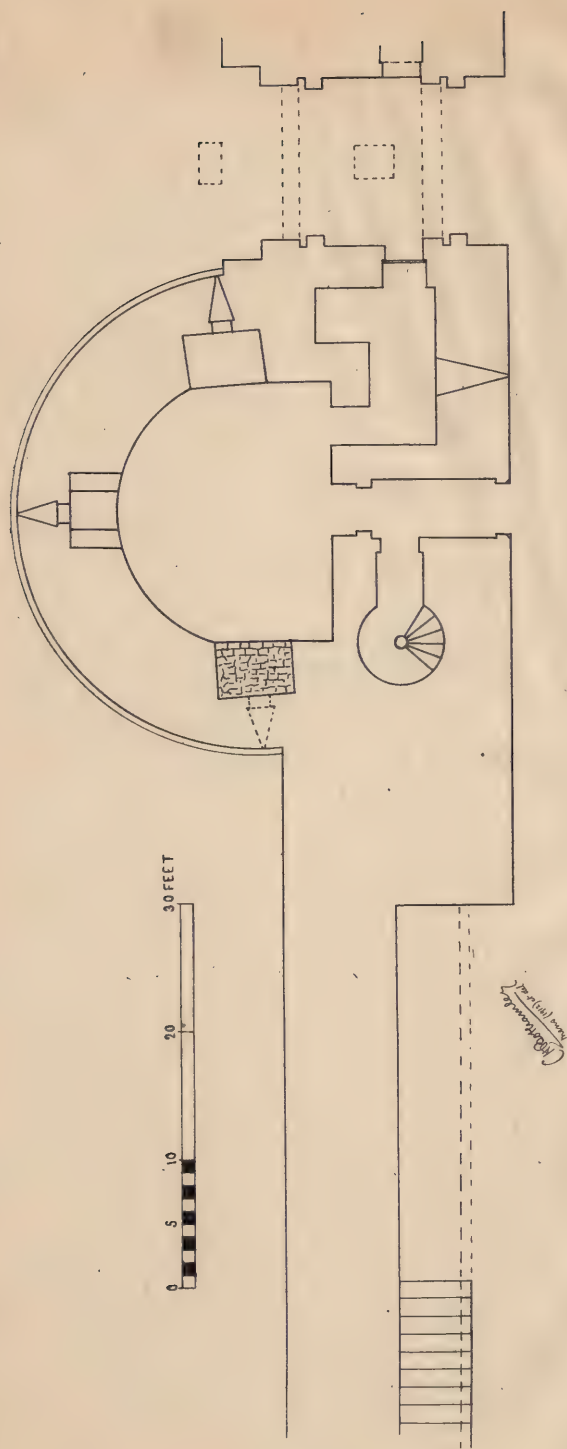


FIG. 12A. PORTE DE LA REINE: PLAN OF GROUND-FLOOR CHAMBER AND ADJOINING CURTAIN.

the portcullis-chambers are entered by square-headed doors from the upper chambers of the towers, and in the Porte Saint-Antoine there is a descent of four steps from each door. The vaults are in four compartments; the openings in the walls behind the portcullis-chases are quite small.

The Porte de la Reine, the south-east gatehouse (plate x, 2 and fig. 12A) belongs to the first building period up to at least the level of the top of the curtain, and the ground-floor chambers have neither fireplaces nor garderobes, but three lofty arched loop-recesses like those in the south-east curtain, but somewhat larger. The loop-recess which flanks the curtain has been built up at the base to a height of several feet, and a gun-port (now filled up) formed in it. Near the portal on either side is a small chamber which opens into the portal by a shouldered door.¹ The chambers, about 25 ft. high to the centre boss, are vaulted in four compartments, and the vaulting ribs, which are similar to those in the Tour de Constance, spring from corbels carved into heads.

The upper chambers and the portcullis-chamber (fig. 12B) are in general like those on the north-east, but the garderobe passages are not in the curtain but are built out behind the parapet. In the upper chambers the fireplaces are under round-arched recesses in the north-west wall. Each chamber has three round-headed recesses in the south-east wall, those nearest the curtain having a loop only, whilst the other two are window-recesses of the usual type. Originally each chamber had a shouldered door to the rampart walk, protected by a single mâchicoulis from the battlements, but these doors were afterwards converted into windows.

The portcullis-chamber has a large open chase in front of each portcullis-chase. There is a high pointed arch over each pair of chases, and in the south-east wall there is a round-headed loop-recess, with filleted seats at the sides. The chamber is vaulted in four compartments, and the ribs meet in a ring, which is open to the roof and is provided with a stone lid.

Unlike any of the others, this gatehouse has side-turrets

¹ On the north-east side this door has been walled up.

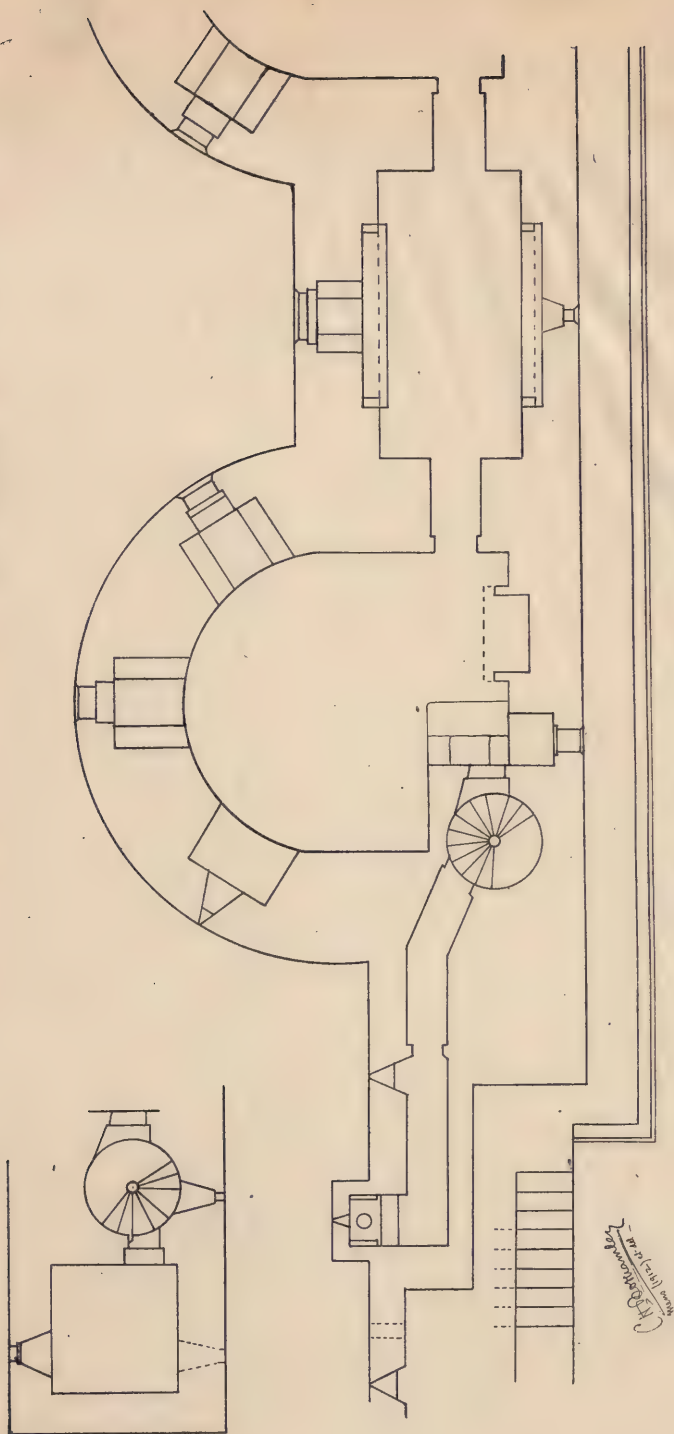


FIG. 12B. PORTE DE LA REINE: PLAN AT RAMPART-LEVEL.

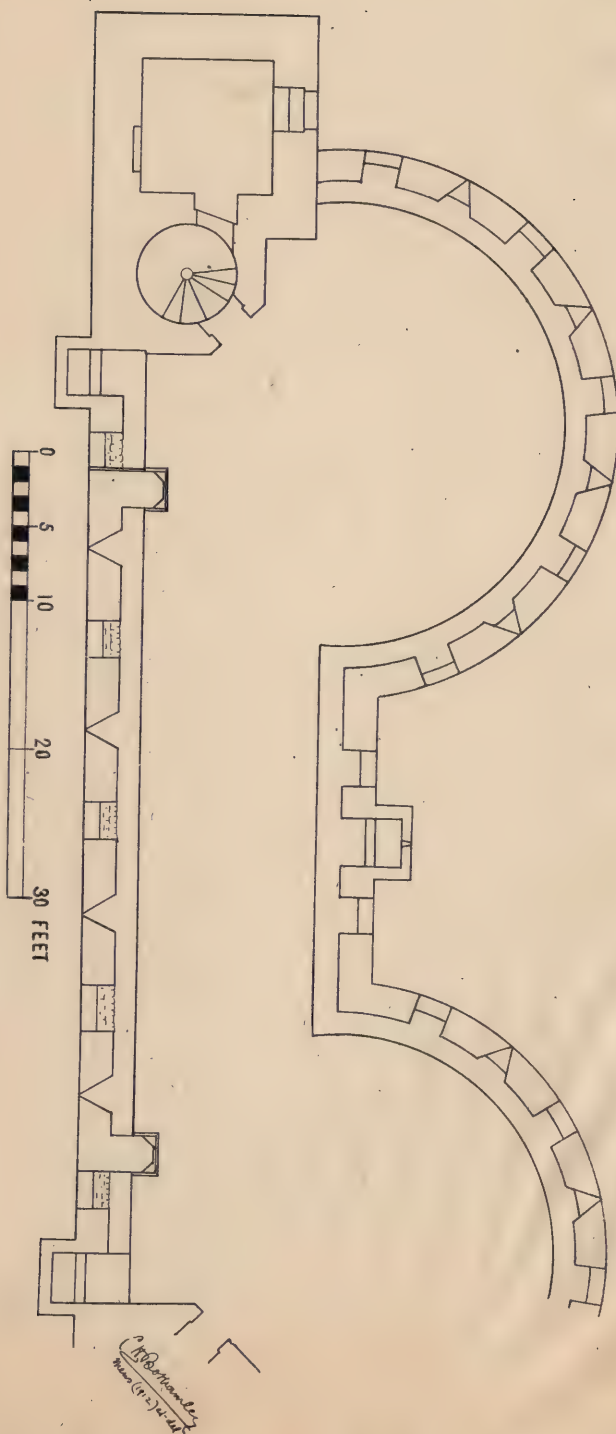


FIG. 12C. PORTE DE LA REINE: PLAN AT ROOF-LEVEL.

*Photostatic
from (12) p. 42*

which are solid at the base, but in the upper parts contain two small vaulted chambers, one above the other, and finish in a battlemented top up to which the newel stair rises. The roof of the main building is reached by doors off the stairs (fig. 12c). The battlements differ from those of the curtain-walls in that the loops do not rise to the tops of the merlons; the embrasures towards the town have been walled up. At the base of the parapet, throughout its whole length, there is a platform 1 ft. 5 ins. broad and 1 ft. high.

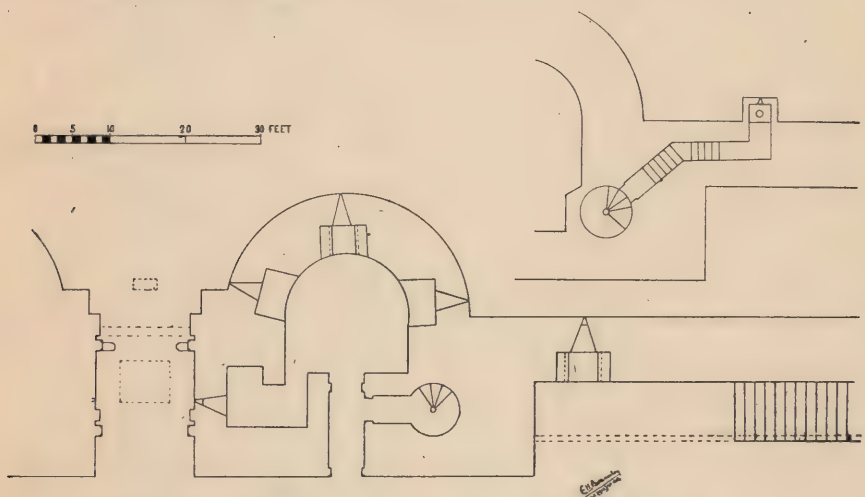


FIG. 13A. PORTE DES MOULINS: PLAN OF GROUND FLOOR.

The Porte de la Marine and the Porte des Moulins, the south-west gatehouses (plate x, 4, 3), are wholly of the second building period, except the foundations and the two or three lowest of the courses now above ground. The ground-floor chambers are vaulted as in the other gatehouses, but are divided into two floors. At the ground-level there are, on the north-east side, the lobby and the doors from the town, with the base of the newel stair on the side furthest from the portal, and a small vaulted chamber¹ on the side nearest the portal, with a loop opening into the passage (fig. 13A). To the south-west each tower has three loop-recesses with flat-shouldered soffits; some of the loop-slits have been

¹ In the Porte de la Marine these side-chambers are 9 ft. 6 ins. by 6 ft. 6 ins. and in the Porte des Moulins 10 ft. 9 ins. by 5 ft. 6 ins.

filled up.¹ The intermediate floor was carried partly on the top of the vaults of the lobby and the adjoining chamber, and partly on beams supported by good corbel-strings in the Porte de la Marine, and by large corbels in the Porte des Moulins. In the former the intermediate floors have window-recesses to the field protected by strong external iron grids and on the north-east a shouldered recess with

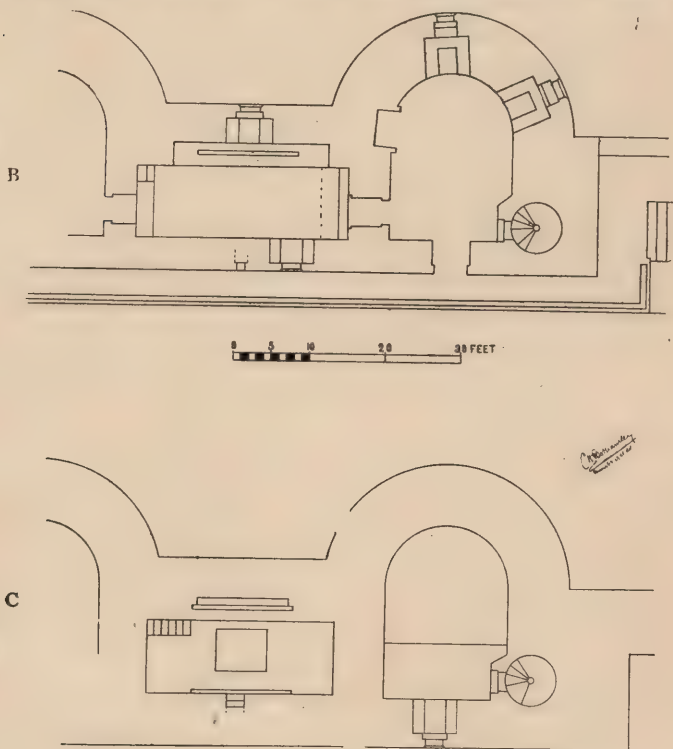


FIG. 13B. PORTE DES MOULINS: PLAN OF UPPER FLOOR.

FIG. 13C. PORTE DES MOULINS: PLAN OF INTERMEDIATE FLOOR.

seats at the sides and a large door; in the latter these floors have no recesses or other openings towards the south-west, but each has a large window-recess towards the north, with filleted seats at the sides, and a flat shouldered soffit (fig. 13c). The upper chambers (fig. 13b) have large fireplaces with projecting hoods, and, as a rule, two

¹ In the Porte de la Marine all these recesses have side-seats similar to those in the round-headed loop-recesses of the cur-

tain; in the Porte des Moulins only the middle recesses have such seats.



1. Porte St.-Antoine (NE. curtain).



3. Town face of Porte de Nîmes.



4. Town face of Porte de la Reine.



2. Porte de la Reine: 'fighting top.'

THE GREAT GATEHOUSES.







1. Porte de la Marine from inside.



2. Porte de la Reine from inside



3. Porte des Moulins from inside.



4. Porte de Montpellier from outside.

round-headed window-recesses, with seats, towards the field. They are vaulted in six compartments and the central bosses in the *Porte des Moulins* are remarkable.

The doors from the rampart-walk to the upper chambers of the *Porte de la Marine* are not in the face towards the town as in all other cases, but are close to the outer parapet of the curtain and are reached by steps, the parapet rising to protect them. The doors from the upper chambers of the *Porte des Moulins* to the rampart-walk are protected by single *mâchicoulis* from the battlements above.

The portcullis-chambers in these two gatehouses have two floors, a very uncommon arrangement (plate XIII, 1, 2). The outer portcullis was worked from the upper floor and the inner one from the lower floor. The upper chambers are vaulted in four compartments, the ribs meeting in a ring,¹ and there are window-recesses with seats at the sides in the north-east and south-west walls. The upper portcullis-chambers are entered on either side from the main chambers of the drum-towers, through doors with square shouldered heads. The lower chamber is reached from the upper by a stone stair in the *Porte des Moulins*, and was reached by a ladder in the *Porte de la Marine*. Each of the lower chambers has only one small oblong opening in the north-east wall. A large part of the floor is occupied by the great oblong opening (6 ft. 6 ins. by 5 ft. 6 ins.) for the projection of missiles over the portal-passage. The floor of the upper chamber was doubtless of wood, and possibly there were two side-platforms or galleries rather than a complete intermediate floor, in order to allow of the casting of missiles through the oblong opening from both floors.

The defences of the portals of all the great gatehouses are in general the same, and consist of an open chase for the projection of missiles in front of the portcullis; a portcullis working in a square groove²; a double-leaf door³; a large oblong opening for the projection of

¹ In the *Porte de la Marine* the ring has been filled with a late carved boss; in the *Porte des Moulins* it is still open, and is rebated for a stone lid.

² About 6 ins. broad and deep.

³ The *Portes de Nîmes*, *de la Reine* and *des Moulins* retain their sixteenth-century doors which are of the same type as those of the posterns, *Porte de l'Organe*, but are more strongly built. In one

of the leaves there is a small door or wicket. The *Porte de Nîmes* has the same type of lower hinges as the *Porte de l'Organe*. In the *Porte des Moulins* the top and middle hinges are large iron rings which encircle the post of the door, whilst the head of the post works in a circular hole in the under-side of a large beam of wood fixed across the top of the doorway, and the lower end of the post works in a hole in the ground, probably on the top of a flat stone.

missiles in the vault of the passage; a second portcullis¹; and a second door, the archway of which exists, although in some cases there are now no signs of hinges. In the south-west gate-houses there is a loop-slit on either side of the passage, between the two portcullises.

In several cases the feet of the jambs of the first doorway project into the roadway for from 7 ins. to 1 ft. 4 ins, but usually this projecting part is worn down considerably below its original height, which seems to have been about 1 ft. The roofs of all the great gatehouses are formed of flat stone slabs like the roofs of the posterns and other towers. This seems to have been the usual method of roofing vaulted towers in the latter part of the thirteenth and early part of the fourteenth century. It is seen for example, in Philippe-le-Bel's bridge-tower and in Fort Saint-André at Villeneuve-lès-Avignon. Usually the battlements are like those of the curtains, but the parapets are lower; in many cases the embrasures towards the town have been walled up. The chimneys are octagonal² with square bases, and they rise to a height of about 11 ft. above the roof, finishing with a moulded cornice. Several of them are still perfect. The Porte de Nîmes has a small garderobe corbelled out from the top of the south-east tower.

THE CHÂTEAU.

The château and its curtilage occupy the northern angle of the town and are of much later date than the town walls. The principal block of the château is a long lofty oblong building which runs nearly due north and south, the north end being actually on part of the northern angle of the curtain, where it originally formed the 'chemin de ronde' of the great tower. It consists of four floors with large oblong windows, quite plain but well proportioned. A circular stair-turret projects from the north-west angle, and against the north end of the west face a low oblong turret has been added through the base

¹ In the Porte Saint-Antoine and the Porte de la Reine there is an open chase for the projection of missiles in front of the second portcullis chase.

² Length of each side about 12 ins.



1. Porte des Moulins: double portcullis-chamber.



2. Porte de la Marine: double portcullis-chamber.



3. Tour de Villeneuve (east angle).



4. Tour de Sel: fireplace and window-recess.



of which is the entrance to the bridge of the great tower. The principal entrance-door, now walled up, has good but not elaborate Renaissance decoration. The whole building is of the typical sixteenth or seventeenth-century work common in the south of France; it was certainly in occupation in 1652, but was probably completed some years before that. The interior of this building is now used as barracks and offices of the Douane.

At right angles to the principal block, and connected with it by a short length of wall, is a lower block which abuts against the north-west curtain and forms the south-western boundary of the enclosure. Whatever may have been its original arrangements, it now forms a row of smallish houses. A third row of buildings, with a lean-to roof, stands against the north-west curtain on the third side of the quadrangle; it seems originally to have consisted of stables and other offices.

Starting from the east face of the principal block, at a short distance from its south-east angle, is a curtain-wall not very thick and of moderate height, terminating in a plain parapet with eight small loops for muskets. At the end near the château the wall has been pulled about and there are three vertical straight joints, one of which rises to the top of the parapet. This curtain runs roughly south-west by north-east, and at the north-east angle its parapet terminates in a small 'tourelle' with oblong openings in its walls and a hemispherical roof. On the inside of the curtain there is a narrow walk with a corbel-string marking its junction with the inner face of the wall. This walk stops some feet short of the château, where the wall has been pulled about, and probably here was a stair giving access to the walk, which had no direct communication with the interior of the château.

From the north-east end of this wall another curtain-wall of a different character joins the main curtain on the north. It is only about 19 ins. thick and is built of bossed stones, but the bossing is much more formal than in thirteenth-century work. In the middle of this wall is a round-arched gateway of typical late sixteenth or early seventeenth-century character, and on either side of it are two short square-headed splayed loops for muskets, their bases being about 7 ft. from the present level of the

ground. The wall has been largely repaired, and the archway seems to have been rebuilt. Opposite this entrance is a plain round-headed gateway leading through the main block into the inner court of the château.

Contemporaneous with the building of the château are certain alterations in the defences of the curtain at this angle, and more especially in the concave portion opposite the great tower. At the extreme north end of the north-west curtain a small chamber, with a door to the south-west, was formed of stone slabs about 9 ins. thick, with a musket-loop to the north and another to the east, the west wall being the original parapet of the curtain. Near this chamber a somewhat narrow stone stair against the inner face of the curtain gave access to the rampart-walk from the lower walk or platform in the north angle within the château curtilage. This stair is blocked by a cross-wall some distance below the top. In the outside face of the north-west curtain a short distance from the north end, not far below the level of the curtain walk, is a walled-up gun-loop.

The north end of the château stands on approximately the middle third of the curved part of the main curtain. The lower portion between the château and the north-west angle is mainly original, and is built of smooth ashlar repaired in places with cement; it batters about 1 ft. 8 ins. to a height of 12 ft. There are indications that at one time the whole face was covered with a thin facing of cement. Not far from the château block there is a late garderobe, partly ruined, and just north of it is a walled-up doorway, about 9 ft. high and 4 ft. wide. The upper part of the curtain and the parapet have been reconstructed and provided with sixteen musket-loops which open in the outer face of the wall as narrow vertical slits, widely splayed backwards and upwards and with considerable plunge.

The curved portion of the curtain on the east of the château was partly outside the château enclosure, and has been altered in a different way. Externally this part is similar in general character to that below the château and to the west of it, and the battering base is original throughout the whole length, but in this eastern section the loops in the outer parapet, which is only 1 ft. 5 ins. in thickness, are quite different. They are at a lower level and consist of two vertical slit-loops, a horizontal oblong loop, a second pair of vertical slits and a second horizontal oblong, all

being splayed towards the inner face. The horizontal loops were probably for small cannon. The walk at the back of this part of the curtain is about 12 ft. lower than the rampart walk of the main curtain on the north, from which a flight of eighteen steps descends to it. The outer and inner parapets of the curtain descend with the steps. The walk is 5 ft. 5 ins. broad, and the inner parapet, 8 ft. 8 ins. high and 9 ins. thick, is pierced towards the town by round-headed loops, alternately 11 ins. high and 8 ins. wide and 2 ft. high and 1 ft. 2 ins. wide, with their bases 3 ft. 7 ins. to 3 ft. 9 ins. from the path. They open full front and have considerable plunge. There are also similar loops in that part of the inner parapet which rises with the steps.¹

From the top of the steps to the Porte de Nîmes, the outer parapet is of the normal thirteenth-century type, but the late inner parapet continues and is 5 ft. 3 ins. high and 8½ ins. thick, the walk being 5 ft. 6 ins. broad. This inner parapet is pierced towards the town with small musket-loops of two types. One type is 1 ft. 3 ins. square at the inner face, and rather smaller on the outer face; the base of the loop slopes downwards and its roof is stepped. The other type has an oblong opening about 1 ft. 4 ins. broad and 11½ ins. high at the inner face, and a much smaller opening in the outer face, placed towards the right hand or the left so that the loop is skew and commands only the right hand or the left hand. They are similar to but larger and more carefully made than the loops in the east wall of the château enclosure. Other loops of a similar pattern, but smaller, have the outer opening in the middle and command full front. There are twenty-four loops in all in this section of the inner parapet, and together they completely command the open space between the château curtilage and the Porte de Nîmes.

MASONS' MARKS.

Masons' or 'banker' marks are extraordinarily abundant on the walls and towers, there being at least 165 different marks, each occurring several times, and presumably,

¹ There is an oblong garderobe-turret at the angle of the château against which this walk abuts on the west, but there is now no

evidence of communication between the walk and the château.

therefore, at least this number of stonemasons took part in the work. The marks are most abundant on the bossed work (especially on the north-west curtain), a result probably due to the fact that they are cut on the projecting boss and therefore were not hidden when the stone was laid as may have been the case with the ashlar work. On the bossed work the marks are large and deeply, if somewhat roughly, cut; on the ashlar they are somewhat smaller, and on the finer ashlar in the upper parts of the posterns, etc. they are still smaller, but nevertheless they are the same marks. The largest are on the inner face of the parapet of the north-west curtain, and some are as much as 12 ins. in their greatest length, and $9\frac{1}{2}$ ins. in their greatest breadth; the particular stones are dressed as ashlar, but the stone itself is coarse.

It is clear that the marks have no relation to the position in which the stone was to be laid, because the same mark often occurs with quite different orientation on contiguous stones. Many of the larger bossed stones have two different marks on the same face. It is especially noteworthy that not a single mason's mark has been found on the Tour de Constance, a fact which points clearly to its erection by a different set of workmen.

SOME POINTS CONCERNING THE MILITARY ARRANGEMENTS.

Certain features in the defensive arrangements are noteworthy, especially in comparison with contemporary structures. The curtains, high and strong, have parapets abundantly pierced with openings for the discharge of missiles, and ample provision is made for the erection of 'hourds' of wood for the protection of the base of the walls. In this respect Aigues-Mortes resembles Carcassonne, but whereas at the latter the loop-slits in the parapets have little plunge and so do not admit of the discharge of arrows in anything approaching a downward vertical direction, at the former the loop-slits as a rule have a very deep plunge, and consequently were effective even when the besiegers were very near to the base of the walls.

Unlike the curtains, the towers, with the exception of that at the west angle, have no provision for 'hourds,'

and this is another interesting point of difference from Carcassonne.

The most noteworthy feature concerning the defences of the gates is the absence of drawbridges. At the Porte de Nîmes there was an attempt, apparently never successfully completed, to insert a drawbridge of the usual French type with counterpoised levers. This may have been in 1345, when, in consequence of the fear of an invasion of Languedoc by Edward III. of England, the fortified towns were put in order and improvements made. The work was clumsily done and the levers of the drawbridge would have prevented the working of the first portcullis. At a still later date there seems to have been an iron bridge, worked by a chain, similar to those used in the sixteenth century and afterwards. On either side of the portal-passage there is in the wall an oblong recess or chase which begins 8 ft. from the ground and rises to the springing of the vault; it is 1 ft. 3 ins. broad and 10 ins. deep. These chases were probably guides for the counterpoises of the later drawbridge.

Doubtless the bridges in front of the other gates were easily removable, but the object of a pivoted drawbridge is to guard against a surprise, and this risk was not great where a town could be approached only across lagoons, or over flat and marshy country by a single raised road on which the Tour Carbonnière kept effective guard.

There are many thirteenth-century gates which show little or no evidence of the former existence of a pivoted drawbridge, and it would seem that this form of defence did not become general until the following century, as Viollet-le-Duc has pointed out.

The portcullis, unlike the drawbridge, was a fully developed and much used defence in the thirteenth century. At Aigues-Mortes it is applied to all the gateways in the town wall, but not, as in some other places, to the doorways into the towers. The indications still remaining as to the gear used for raising and lowering the portcullis are, however, somewhat obscure. In the Porte de Nîmes, in the walls on either side of the arched recess below which the portcullis worked, there is a pair of large holes which seem to have held beams to support a winding-gear. In the Porte de la Marine there is a large round hole in one side of

the arch over the portcullis-groove. In the other great gatehouses and in one of the postern towers there is a large square or oblong hole in the soffit of the arch over the portcullis-grooves, or in the wall at the back of that arch, and it is not improbable that these holes at one time contained short strong beams carrying a pulley.

The very complete defences of the portal-passages have already been described in detail. In few remaining cases are they so complete, and in still fewer are they more elaborate. The large opening for the projection of missiles over the middle of the passage is a feature rarely met with in England. The King's gate at Carnarvon castle, however, has several openings which are similar, though smaller and not quite in the same position. At Beaumaris and Harlech castles and elsewhere the portal-passage possesses no stone vault, but only a series of broad arches with broad spaces between. The floor above was of wood, and no doubt the boards were movable, so that a whole series of openings could be made available for the defence of the passage almost throughout its entire length. The Carnarvon and Beaumaris gatehouse-passages are amongst the few that have more elaborate defences than those of Aigues-Mortes, and it is interesting to remember that Edward I learnt the art of war, for a time at least, with Louis IX and Philippe-le-Hardi.

Another feature of considerable interest is the protection of many of the external doorways by means of single *mâchicoulis*¹ projecting from the battlements above each door. Externally these structures are indistinguishable from projecting garderobes, but their internal arrangement is different. As a rule they are open at the top as well as at the bottom, and they have low breast-walls on the inner side continuous with the main parapet. In their outer wall they have a short loop. These single *mâchicoulis* are a distinctly eastern feature brought back by the crusaders. At Krak of the Chevaliers (Kalaat-el-Hosn) which is earlier than Aigues-Mortes, a considerable length of the eastern wall is protected by a row of single

¹ I have preferred the term 'single *mâchicoulis*.' Mèrimée suggested the word *moucharabi*, which was adopted by De Caumont, but it does not distinguish

between this defensive arrangements and a projecting garderobe. Some modern French writers use the word *bretèche* in this connection.

mâchicoulis, whilst the western wall has groups of two, three, and four mâchicoulis and the towers on the north and south have fully developed machicolations protected by galleries built of and roofed with stone, such as did not appear in France until nearly a century later.¹

ADAPTATIONS FOR THE USE OF FIRE-ARMS.

The alterations in the loops, etc. to adapt them to the use of cannon, arquebuses and muskets, are of considerable interest. Most of them date from the sixteenth century, for Aigues-Mortes, like many other fortified places in France, was maintained in a state of efficiency during the wars of religion. The three great gun-embrasures made at the top of the Tour de Constance closely resemble, even to

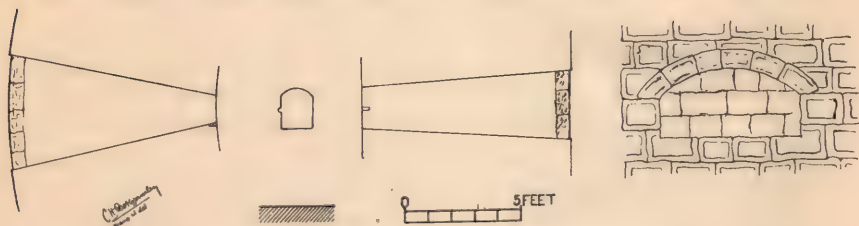


FIG. 14. GUN-LOOP IN TOWER BASEMENT.

the rounding-off of the upper edge of the wall, the gun-embrasures at Nuremberg and elsewhere, which were also made in the sixteenth century. It was soon found, however, that the construction of gun-platforms at a great height, as at Aigues-Mortes and Nuremberg, was a mistake, the plunging fire being comparatively ineffective.

Other alterations for cannon were the gun-loops made in the gate-towers and wall-towers in order to flank the curtain. These are probably somewhat earlier than the alterations to the Tour de Constance, for as a general rule the flanking of the curtains was the earliest application of cannon for defensive purposes. The loops were somewhat widely splayed and were constructed in a solid mass

¹ *Etudes sur les Monuments de l'architecture militaire des croisés en Syrie*,
by J. Rey (Paris, 1871).

of masonry built into the base of the original loop-recesses, where these were of the earlier design; but, where the loop-recesses in the base of the tower were of the later design, with the recesses some feet above the floor, the loops were formed in the wall of the tower below the bases of the recesses.

The cannon used were small and seem to have been supported on trunnions working on bearings formed in the stone-work. Very few of these bearings remain, but they seem to have been arranged on the towel-roller principle so as to admit of the easy mounting and dismounting of the guns. A similar method of support was used in some of the towers on the south front of the outer enceinte at Carcassonne.

A loop-recess near the north-east end of the north-west curtain, and another in the short north curtain, were altered at the base to admit of the use of a gun below the archery loop, which was retained, with the seats at its sides (plate VII, 2), but these and the large gun-port (now walled up) in the north-west curtain near its north end, probably the latest of them all, complete the list of alterations of this type.

Loops for arquebuses and muskets are of several different types. Some of the loop-recesses of the earlier design in the east and south angle-towers and the south-east curtain, have the slit walled up to about half its height, and a loop formed in the filling, about 12 ins. square at the inner face and 2 ins. square at the outer face, with considerable plunge (plate VII, 1).

The western half of the 'chemin de ronde' of the great tower has vertical loop-slits widely splayed backwards and upwards, with a steep plunge. The eastern half has some vertical slits and some horizontal slits, both splayed towards the inner face but with little plunge, and the inner parapet of this part of the curtain has plain round-headed openings of different sizes, like those of some German walled towns of the sixteenth century.

The loops in the rear parapet of the northern section of the curtain, and in the east parapet of the château curtilage (p. 278), differ from all the others and are probably the latest of them all, since they are only suitable for muskets with comparatively slender barrels. The

peculiar design of the loop, which admits of the musket being used in one direction only, is remarkable, but it is met with elsewhere, and the same restriction of direction is not uncommon in the earlier loops for cannon.

DECORATIVE FEATURES.

Next to the general excellence of the construction and the completeness of the defensive arrangements, the most striking feature of the towers and walls of Aigues-Mortes is the abundance of decoration, which in buildings of an essentially military character is very unusual. Even in the famous castle of Coucy there was nothing finer. At the greater stronghold of Carcassonne, extensively altered and completed by the same kings, there are carved corbels in the principal chambers of the Narbonne gate and the Tour de Trésau, but the work lacks vigour and the vaulting-bosses in these and the other towers are of no great merit. Aigues-Mortes can show no window-tracery comparable with that of the inner face of the Narbonne gate, but its towers are far richer in capitals and bosses, which in beauty and boldness of design, and skill and vigour of execution, compare favourably with work of the same period in ecclesiastical buildings. In part this may be explained by the fact that the various towers were residential as well as defensive and, with the great tower, were designed to provide accommodation for a garrison which was intended to be a royal and not a burgher garrison. On the other hand, the ground floors of the east and south angle-towers, and of the two towers of the Porte de la Reine, were solely for defensive purposes, and yet they have corbels and bosses finely carved, and the vaulting-ribs are graceful and well moulded. The bold and well-moulded double cornice which marks the upper edge of the inner face of the curtain-wall for a large part of the circuit, is intentionally decorative, and so are the moulding of the seat edges, etc. in the loop-recesses, and the moulding and mitring of the edges of the stone stairs, the corbelling of the turrets of the posterns, and the mouldings (three ogee strings) of the edges of the great openings in the vaults of the portals of the great gates on the south-west front. The word

'sumptuous' used by pope Clement with reference to the great tower of king Louis, might well be applied to the whole work. Aigues-Mortes in fact was begun as a king's town, and as a king's town it was finished. Likely enough Philippe-le-Hardi and Philippe-le-Bel looked on the work as a memorial of their great and pious ancestor, and spent lavishly in order that the town he founded in connexion with his crusades might be completed in a fitting manner. Philippe-le-Bel's own great stronghold of Fort Saint-André at Villeneuve-lès-Avignon shows much fine building, but no such decoration for decoration's sake as is found at Aigues-Mortes, though the bridge-tower has some very well carved corbels and bosses.

The decorative features of the great tower have already been described (pp. 224-234).

In all the chambers of the gatehouses and wall-towers, including the portcullis-chambers, except when the vaulting ends in an open ring, the central bosses are well carved, generally in the form of a wreath of foliage somewhat naturalistically treated. In the western ground-floor chamber of the Porte de Nîmes, the boss is an insertion in white stone or plaster, and is carved as a shield semée with fleurs-de-lis. In this chamber and in one or two other instances there are corbels 'restored' in white stone or plaster, probably in the sixteenth century.

Three of the bosses are exceptionally fine. In the main upper chamber of the north-east tower of the Porte de la Reine the central boss is a ring of leaves enclosing a beautiful figure of a seated Christ, very delicately carved. In the westernmost gatehouse on the south-west front, in the upper chamber of the south-eastern tower, the boss consists of a ring of deeply undercut foliage surrounding the head and shoulders of a man with curled hair, holding his mouth open with both hands, very delicately carved, with all the fingers still perfect; from the wrists drop wide sleeves. In the north-western tower of the same gatehouse a wreath of leaves encloses the head and torso of a winged angel, with the left arm across the breast and the hand holding what seems to have been a lamb, but it is much decayed. The right hand is broken away. The workmanship is fine and the treatment of the wings, hair and raiment, very delicate.

It is noteworthy that in Philippe-le-Bel's bridge-tower at Villeneuve-lès-Avignon, one of the vaulting-bosses consists of a circle of vine-leaves surrounding a very delicately carved human face.

In the lower chambers of all the towers, except those of the great gatehouses on the south-west front, the corbels are carved as human heads or as animals, generally alternating. In the upper chambers the corbels are usually plain, but are cleft to form three divisions, and have a distinct but plain abacus. The north-eastern upper chamber of the *Porte de la Reine* is exceptional, because in it the corbels are human heads or animals, somewhat large, carved with great breadth and vigour and still remarkably well preserved. The upper chamber of the north-east turret of the same gatehouse also has good carved corbels, notably a fine head of a Bacchus with sprays of vine-leaves. Another exception is the *Porte des Cordeliers*, which has two large and fine corbels supporting the cross-arch of the vault of the chamber.

Many of the gargoyles are well carved. On the south turret of the *Porte des Cordeliers* is a man's head and shoulders under a winged creature (? a vampire), and on the western postern of the south-west front one gargoyle is carved as a human head and shoulders with a large bird (head missing) standing on the shoulders.

THE TOUR CARBONNIÈRE.

There was until quite recent times only one road into Aigues-Mortes, of necessity raised high above the marshes, and rather more than two miles from the town this road was blocked by the Tour Carbonnière,¹ an oblong building some 52 feet high, which served the double purpose of an outpost and a far-advanced gatehouse (plate iv, 3). It was erected at the same time as the town walls² and is of the

¹ The name seems to be derived from a Pont Carbonnière which was in existence in the thirteenth century. On 4th June, 1270, Stephen Bonaudi and Bernard Iterii were fined for fishing in the waters of Psalmodi and "sub ponte Carbonerieae" (Falgairolle, *La Tour Carbonnière à travers les Siècles*. Nîmes, 1900).

² It was completed before 1313, when Pierre, abbot of Psalmodi, allowed the governor, Guirard de Non-Vila, to take rushes and reed-grasses in the forests of the monastery (which was close by) for the heating of the oven in the tower (Falgairolle, *op. cit.*).

same general construction, the original exterior work being of bossed stones, whilst the later parapet and the repairs are in ashlar. The tower at first had corbelled turrets at the angles like those of the town posterns, and most probably the battlements were likewise of the same type as those of the town, but in the sixteenth century the top of the tower was reconstructed. A new and lower parapet was built with its outer faces flush with those of the tower, even at the angles, and the turrets were cut down so that only the corbelled bases are now left. An embrasure for a gun was formed in the middle of each face of the parapet, with a narrow loop on either side. At the same time the head of the staircase was made cylindrical, with a hemispherical roof like the 'tourelle' at the angle of the château enclosure in Aigues-Mortes.

Originally the tower entirely blocked the roadway, and the only passage was through its portal, which had the ordinary defences of a gateway: i.e. a portcullis, a double-leaf door, an opening in the crown of the vault for the projection of missiles, and a second portcullis. The arches are segmental like some of those of the gateways of Aigues-Mortes. The staircase and the side-chambers (which have loops similar to those of the curtain of the town) are reached through a door within the portal. Over the northern entrance there is a single mâchicoulis with a flat roof formed by a single stone, but this is clearly an insertion of the same date as the alteration to the battlements, or possibly later. Rather lower and to the right of it is a narrow square-headed door opening from the stair in the north-west angle; the door seems to be original, and may have led into a garderobe or into a bretasche. The middle part of this face of the tower is much patched and repaired.

Above the portal there is one large chamber about 24 feet by 22 feet, with a very large fireplace at the back of which is an oven. The chamber is vaulted in two bays, the ribs of each bay meeting in a carved central boss (Falgairolle, *op. cit.*).

The tower served not only as an outpost, but also, after 1409, as a toll-gate. In modern times the roadway has been carried round both sides of the tower and the passage through it is no longer used by vehicles.

Falgairolle states that in 1651 the *Etats du Languedoc* constructed drawbridges on both sides of the tower as a protection against the plague; the south face now shows no traces of such structures, but the north face, as already stated, has been much repaired.

The garrison of this tower seems to have been quite small even in troubled times; in March, 1591, and again in 1598, it consisted only of three men-at-arms.

LATER HISTORY OF THE TOWN.

During the fourteenth and fifteenth centuries Aigues-Mortes was a valuable place of refuge from the Mediterranean pirates. Its position, and the very substantial revenue¹ derived from the dues of the port and from the neighbouring salt-works, gave the town considerable importance, and up to the time of the French revolution it played a relatively conspicuous part in the history of that part of France. The rapidity with which the lagoons and waterways silted up made the expense of keeping the port open very high, and from time to time taxes were levied on the district for the purpose of defraying the necessary expenditure. For example, in 1336 a notice was issued to the inhabitants of Montpellier concerning the reparation of the port of Aigues-Mortes: the maritime canal was to be prolonged at the side of Aigues-Mortes up to the closed gate of la Vacquarie at one end, and at the other (but always on the same side) starting from the mole as far as the tower on which the windmill was placed.² This notice shows that at quite an early date it was recognised that an unnecessary number of posterns had been made on the south front; the *Porte de la Vacquarie* is clearly the postern now called *Porte de l'Arsenal*. Again, in 1428 Charles VII levied a tax on the district for the purpose of re-establishing the port, and other instances might be cited.

¹ As early as 1288 the seneschal of Beaucaire reported to Philippe-le-Hardi that the dues of the port at 'un denier pour livre' (i.e. one two-hundred-and-fortieth part of the value of the merchandise) amounted in that year to no less than 5,500 livres, equiva-

lent to about £20,000 in modern money. The prosperity of the port was artificially increased by royal decrees issued from time to time restricting traders of different kinds to the use of this port alone.

² Pagézy, *op. cit.* 390-391.

In July, 1538, Aigues-Mortes was the scene of the historic meeting between king Francis I and the emperor Charles V.

During the wars of religion the town was the most important strong place in this part of France and suffered many vicissitudes. In 1562 it was besieged by a force of 20 'ensigns' of men-at-arms (three to four thousand men), 300 horsemen, two cannon and three field-pieces, but before the town was taken the force went off to besiege Frontignan. In January, 1575, soldiers under the command of the comte de Damville took the town by stratagem and pillaged it, not sparing even the churches. From that time onward it remained in the hands of the Huguenots and was one of their 'places of security.' In 1577 there was a garrison of 200 men-at-arms; in 1591 the garrison of Aigues-Mortes was 120, of Peccais (a neighbouring fort protecting the salt works), 18, and the Tour Carbonnière, 3. In the following year, with a garrison of 128, it was besieged but not taken, and again in 1598 there was another unsuccessful siege for some weeks, and the attackers spent 120 crowns' worth of balls, ropes, and powder.² Later, Henry IV maintained in the town a garrison of 150, who also served Peccais and the Tour Carbonnière.

Aigues-Mortes remained in the hands of the Huguenots until 1622, when Châtillon (Gaspard de Coligny) handed it over to Louis XIII and received from him 150,000 livres turnois and the title of Marshal of France. In 1745 it was reported that owing to renewed activity against the Huguenots the towers were once more crowded with prisoners. The Tour de Constance was used mainly, if not entirely, as a prison for women, some of whom were mere girls, and some were immured therein for as long as forty years.

At the revolution the town lost its ancient royal privileges, and owing to the silting up of the port it fell into decay and the population dwindled. Latterly, however, owing to the construction of the Beaucaire canal, the maritime canal to Le Grau-du-Roi, and the railway, and the prosperity of the surrounding vineyards, which are remarkably immune from attacks of the phylloxera, the town is once again prosperous. The space within the walls is

² *L'Entreprise d'Aigues-Mortes*, by A. de Cazeneuve. Nîmes. 1893.

crowded with houses, and a substantial suburb is growing up outside the northern curtain.

NOTE.—Early in the fifteenth century the town was taken by stratagem by a party of Burgundians and held by them for a short time. According to a story generally accepted and often repeated, the Burgundians during a night at the end of January, 1421, were surprised and put to the sword, their bodies being thrown into the south-west angle-tower of the town (still called the tower of the Burgundians), and covered with salt to prevent decomposition. It is obvious from the structure of the tower that the story is improbable. Jefferys (op. cit. p. 419) says that the bodies were thrown into the ditch and there covered with salt, which is not impossible, but according to the *Hist. générale de Languedoc* there is no historic evidence of any such massacre of the Burgundians.

APPENDIX.

I.

Exchange between Louis IX (St Louis) and the abbot of Psalmodi of land in and around Aigues-Mortes.

KING.

Ludovicus Dei gratia francorum rex universis ad quos praesentes litterae pervenerint salutem. Notum facimus quod nos de voluntate et assensu abbatis et conventus Psalmodiensis eidem abbati et conventui in recumpensatione territorii in quo sita est villa nostra de Aquis Mortuis et fortalicia ejusdem loci quod territorium incipit a conssoa Johannini quae dividit terram dominae Giraldae a territorio nostro et de illa conssoa protenditur directe usque ad caput pontis novi Psalmodii tali modo quod totus pons cum calceia noster est et inde protenditur iterum ad Aquas Mortuas secundum quod tenementum sancti Clementis illud dividit, et durat in illa parte usque ad sylvam domini de Portubus et de illis Portubus usque ad mare et a mari usque ad praedictam conssoam Johannini; quod territorium cum omni jure quod in eo habent idem abbas et conventus nobis perpetuo quittaverunt dedimus et concessimus

ABBOT.

Omnibus praesentes litteras inspecturis Remundus permissione divina abbas Salmoodii et ejus loci conventus salutem in Domino. Notum facimus quod nos unanimi ac deliberato consensu territorium in quo sita est villa de Aquis Mortuis et fortalicia ejusdem loci, quod territorium incipit a consa Johannini quae dividit terram donae Gairodæ a territorio domini Regis, et de illa consa directe protenditur usque ad caput pontis novi Salmoodii, cum toto ponte et calcia et inde iterum protenditur ad Aquas Mortuas, secundum quod tenementum sancti Clementis illud dividit et durat in illa parte usque ad sylvam domini de Portubus, et de illis Portubus usque ad mare et a mari usque ad praedictam consam Johannini, cum omni jure quod habebamus ibidem domino nostro Ludovico, Dei gratia illustri regi Francorum quittavimus et concessimus ab ipso et heredibus ejus perpetuo possidendum.

quamdam terram sive condiminam quam habemus in territorio Sumidrii juxta muros ejusdem castri in porta ejusdem castri contiguam viae quae ducit Alestum, a sinistra parte usque ad viam quae ducit ad molendinum de Gravel, et ab eodem molendino super riperiam Vidolle usque ad fossata praedicti castri et iterum a capite fossatorum super eadem fossata usque ad portam supradictam ab eisdem abbate et conventu perpetuo possidendam. In praedicta tamen terra nobis omnimodam justiciam retinentes. In cujus rei testimonium et munimen sigillum nostrum praesentibus litteris duximus apponendum.

Datum apud Aquas Mortuas anno Domini millesimo dussentisimo quadragesimo octavo mense Augusti.

Ipse vero dominus Ludovicus nobis in recompensatione dicti territorii dedit et concessit quamdam terram sive condaminam quam habebat in territorio Somearii juxta muros ejusdem castri in porta ipsius castri contigua viae quae ducit Alestum, a sinistra parte usque ad viam quae ducit ad molendinum de Gavenel et ab eodem molendino super ripam Bedollae usque ad fossata praedicti castri et iterum a capite fossatorum super eadem fossata usque ad portam praedictam a nobis abbate et conventu perpetuo possidendam. Hoc salvo quod idem dominus rex sibi et heredibus suis retinuit omnimodam justiciam in terra superius nominata.

Nos vero praedictam recompensationem gratanter recipimus et acceptam habemus et in testimonium et munimen omnium premissorum segilla nostra presentibus litteris duximus apponenda.

Actum apud Aquas Mortuas anno Domini M^oCC^oXLVIII mense Augusto.

II.

Agreement of Philippe-le-Hardi with William Boccanegra concerning Aigues-Mortes.

Carta aquarum mortuarum pro portu faciendo a Guillelmo Buccanigra.

In nomine sancte et individue Trinitatis, amen. Philippus, Dei gratia Francorum rex, notum facimus tam presentibus quam futuris, quod nos cum dilecto et fideli nostro Guillelmo Buccanigra, serviente nostro tales conventiones inivimus, videlicet quod idem Guillelmus in clausura et firmitate ville Aquarum Mortuarum construenda, in faciendo ac emendando portu eidem ville adjacenti, de suo usque ad summam quinque milium librarum turonensium in primis ponere tenetur et solvere per notitiam senescalli nostri Bellacadri, vel alterius quem ad hoc duxerimus deputandum. Et dabit idem Guillelmus bonam et sufficientem securitatem de pecunia illa solvenda et expendenda in opus predictum, ita quod statim in initio tradet quingentas libras expendendas in predictum opus sine mora frustratoria. Et post illas conversas in predictum opus, ponet successive quingentas post quingentas donec tota summa predicta quinque milium librarum turonensium integraliter fuerit persoluta et in opus predictum conversa.

Nos autem insuper concessimus, quod omnes exitus et proventus tam ville predictæ quam portus et pertinentiarum impendantur et ponantur totaliter in opus clausure ac firmitatis ville et emendationem portus predictorum, per notitiam senescalli nostri predicti, vel alterius quem ad hoc deputaverimus usque ad decennium continue complendum.

Et ex nunc nos et predictus Guillelmus villam et portum supradictos cum pertinentiis, secundum quod per senescallum nostrum Bellacadri, vel alium deputandum a nobis limitabuntur communiter possidebimus.

Elapso vero termino prenotato, medietatem omnium reddituum ac proventuum tam ville quam portus et pertinentiarum predictarum idem Guillelmus ac heredes et successores ejusdem in perpetuum jure hereditario percipient et habebunt, et de nobis et heredibus nostris tenebunt in feodum et homagium ligium.

Et nobis et successoribus nostris tam ipse quam heredes et successores sui de ipsis rebus homagium ligium facere tenebuntur, et servitium competens post elapsum decennium ad usus et consuetudines patrie secundum quod res predictæ valebunt.

Retentis nobis et successoribus nostris, quittis et liberis, turri nostra cum fossatis et vallo circa turrem et domibus quas habemus in villa Aquarum Mortuarum.

Volumus etiam, concedimus et statuimus quod de omnimodis mercibus ad dictum portum venientibus, sive per mare sive per terram, de singulis viginti solidatis unus denarius persolvatur, exceptis victualibus que in dicta villa expendantur.

Sane in tempore passagii generalis, vel alias, nichil exigetur a peregrinis qui transfretabunt in subsidium terre sancte, vel alibi, pro diffensione fidei Christiane, de rebus videlicet quas portabunt ad opus suum, et credetur juramento vel fidei uniuscuiusque super hoc, videlicet quod portant ad opus suum, et non causa negotiationis faciende. Quia de hiis qui portarent causa negotiationis faciende, solvere tenerentur; ceterum de mercatoribus qui vendent et venient ad dictum locum Aquarum Mortuarum recipietur costuma, etiam si venderent peregrinis. Omnia autem incrementa, acquirementa et emendationes que fient communiter in predictis inter nos et successores nostros ex una parte, et dictum Guillelmum ac ejus heredes et successores ex altera, per medium equaliter partientur.

Retentis nobis homagiis, fidelitatibus hominum, exercitu et cavalcata, nec non alta justitia quam extendimus ad omnem casum in quo contigerit aliquem parti debere mortem, vel exilium, vel membri mutilationem. Retentis etiam nobis incurrimmentis rerum que cadent in commissum.

Preterea banna que fient in villa tantummodo fient auctoritate nostra et nomine nostro. Et insuper ad colligendos redditus, ponentur per nos et dictum Guillelmum bajuli et ministri qui, quotiens instituentur, jurabunt quod nobis et heredibus et successoribus nostris, et dicto Guillelmo et heredibus et successoribus suis, de rebus nobis et ipsi communibus reddent rectam et legitimam rationem. Ceterum ad tenenda placita et ad causas audiendas, et ad faciendum justiciam ponetur ballivus solummodo per manum nostram, qui jurabit similiter quod in hiis que remanent communia nobis et dicto Guillelmo fidelem reddet rationem.

Et est sciendum quod post decennium completum, secundum quod erunt inter nos, heredes et successores nostros et dictum Guillelmum heredes e

successores suos commoda communia, ita et onera que fieri contigerit pro predictis villa et portu construendis, emendandis, vel in bono statu tenendis, a nobis et ipsi equalitates (sic) supportentur.

Item licebit nobis et successoribus nostris, in tempore passagii generalis sine assensu dicti Guillelmi et heredum suorum, facere et instituere amiraldum, qui habeat jura amiraldie, quem ad modum ante confectionem presentium alias extitit usitatem.

Jurabit etiam dictus Guillelmus in principio operis predicti et post eum omnes successores sui, quod dabunt fideliter operam et diligentiam quam poterunt adhibendam in opere predictorum portus et ville et rebus ipsorum meliorandis et in bono statu tenendis.

Quod ut perpetue stabilitatis robur obtineat, presentem paginam sigilli nostri auctoritate, ac regii nominis karactere inferius annotato fecimus communiri.

Actum apud Marmandam in Agenesio, anno Dominicæ Incarnationis millesimo ducentesimo septuagesimo secundo, mense maio, regni vero nostri anno secundo. Astantibus in palatio nostro quorum nomina supposita sunt et signa: Dapifero nullo—signum Johannis buticularii—signum Erardi camerarii—signum Imberti constabularii.

Arch. Nat. : JJ. 301 44^A.

III.

Extract from a report concerning the port and walls of Aigues-Mortes in 1289, made by Adam de Montceliard, seneschal of Beaucaire, by order of the king, Philippe-le-Bel.

[The report first sets out in detail the needs of the port and gives particulars of an agreement which the seneschal has made with one Nicolas Cominelli for the due execution of works thereon. It then refers to the walls.]

“Super facto murorum Acquarum Mortuarum ita inveni et mensurari feci per magistros ad hoc electos quod de portalibus turribus et posterillis sunt faciende adhuc MVI^o LXVII^o canne et VI palmi et de muris planis MV^o LXXX et V palmi et dimidium; qui muri in universo ut compleantur sidarent ad tascham, inveni aliquos qui facerent unam cannam cum alia pro IIII^o libris et X solidis, vel totum in universo omnino ad expensas suas pro XII^m libris. Illi magistri qui nunc faciunt et facerent turres et postellas pavatas desuper faciendi turres altiores quam muri plani IIII^{or} cannas; quod si dominus rex velit dictum opus ad suas expensas compleri facere, videtur mihi et dictis consiliariis quod constabit XX^m libris vel plus: quare magis utile esset, ut mihi videtur, dare ad dictam tascham quam sicut hactenus est operatum.

Actum fuit hoc in Aquis Mortuis in domo turris XIV kal. Novembris anno M^o CC^o LXXXIX.

(The endorsement is ‘Hec sunt informationes que mittuntur domino regi per senescallum suum Bellicadri facte ad mandatum ipsius domini regis.’)

Arch. Nat. : J. 896-903.